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FROSTBITE AND TRENCH FOOT

By Raymond Greene, D.M.Oxfd

MEDICAL OFFICER WITH THE BRITISH HIMALAYAN EXPEDITION, 1931, AND THE MOUNT EVEREST EXPEDITION, 1933

For some years frostbite and trench foot have been of little interest to doctors in this country. The war, especially on the Russo-Finnish front, the activities of the Royal Air Force over Germany, and the recent spell of frost over Europe have given them a fresh importance which is likely to increase. Many doctors entirely inexperienced in their treatment will be faced with cases and will find little help in textbooks or handbooks. Indeed, if one first-aid manual may be taken as an example, they may be led into harmful practices.

ÆTIOLOGY

Essentially, frostbite and trench foot are of like cause. Though they differ in onset, in appearance, and often in result, the underlying pathological processes differ only in degree (Smith, Ritchie, and Dawson 1915a). The primary cause is cold. Comparatively slight cold, when combined, as in muddy trenches, with prolonged damp and muscular inactivity, produces trench foot, a disorder of insidious onset which crippled thousands and killed many in the Balkan wars (Page 1914) and was a serious problem in the trench warfare of 1914–18. Severe cold, especially when combined with a high wind or a great altitude, produces frostbite, a more sudden and ultimately more crippling disorder. Typically, days or even weeks of immersion in mud are needed to cause trench foot. In contrast, the contact of a momentarily ungloved finger with the button of a camera in a high wind, at a temperature below zero Fahrenheit and at an altitude of about 25,000 ft., once cost me a fingertip. It is this true frostbite which is the dread of doctors attached to arctic and Himalayan expeditions and occurs even in this country among airmen. It has been extensively studied in New York, where it is a common accident among workmen in winter (Brahdy 1937). In that city it occurs near to properly equipped hospitals, where careful observations and elaborate treatment are possible.

Trench foot is heralded by a numbness of the feet, which often changes to great pain when the boots are removed. The skin is first white, then mottled and bluish-red. Blisters containing straw-coloured or bloodstained fluid appear and may break down to form crusts or indolent ulcers. The toes may turn black, and the nails may be loosened. Usually, moist gangrene follows. There are changes in sensation, both anæsthesia and paræsthesia. In the absence of sepsis or gas gangrene, properly treated patients make an uneventful recovery, though loss of tissue may be considerable (Thompson 1937).

True frostbite is usually, though not always, of quicker onset. The usual burning sensation of great cold dies away, and all sensation in the affected part is lost, a stage of great danger to the unwary. At this stage the skin is white; either waxy or sometimes, when the surface is completely exposed, like skin sprayed with ethyl chloride. When fingers or toes are involved, the joints become stiff. Thereafter, with careful treatment, any of the following sequelæ are possible:

(1) Complete recovery may take place.

(2) Complete recovery may apparently take place, but after a variable interval neuralgic pains may begin. The skin is usually hypoæsthetic. After weeks or even months the nails may fall off. Whether they do so or not, the new nail is usually malformed for a time.

(3) If damage is rather more severe, the affected part may show anæsthesia to cotton-wool and pinpricks, with loss of temperature sense. Except for occasional shooting pains, no discomfort is felt when the part is at rest; but, if the feet are affected, there is great pain on walking, especially in the toe-joints. Recovery may be complete in a few weeks except for the loss of nails.

(4) Gangrene, either of the skin or of deeper structures also, may develop. The part turns from white to red, darkens to black, and, in most cases carefully tended, becomes woody and shrunken. A line of demarcation appears, and the part gradually separates unless held in apparently harmless association with the living body by bone. Moist gangrene may develop.

PATHOLOGY

The pathology of the two conditions was studied by Smith, Ritchie, and Dawson (1915a), who have shown that the essential change is damage to the vessel walls, followed by transudation and œdema, or even rupture and hæmorrhage, into the surrounding tissues. The workers in the department of clinical research at University College Hospital medical school have since then added greatly to our exact knowledge of the reaction of the skin to cold. Their work gives a possible explanation of the hitherto mysterious action of mud in producing at comparatively high temperatures damage so nearly akin to frostbite. Lewis and Love (1926) have shown that the skin begins to freeze when its surface temperature is reduced to a point between $-2{\cdot}2°$ C. and $-25°$ C., the wide variation being due to the factor of supercooling—the capacity, that is, to go below freezing-point without solidifying—a factor which varies with different people. Supercooling does not harm the skin; prolonged freezing does. The capacity to supercool may be abolished by soaking the skin in water, and skin which does not supercool may be induced to do so by leaving it unwashed for a week or by rubbing in olive oil, an observation which gives scientific authority to the ancient use of whale oil.

At altitudes above sea level the effects of a low pressure of oxygen on the circulation-rate are important. The increased pulse-rate at great altitudes is not, as might be expected, a form of compensation but a sign of distress (Doi 1921, Schneider 1921, Barcroft 1925) and is accompanied by a reduction in the minute-volume of the heart. Indeed, the condition at great altitudes, where pulse-rates of 180 and 200 have been recorded, may well be like that in paroxysmal tachycardia, in which the minute-volume falls in proportion to the increase in the heart's rate (Barcroft, Bock, and Roughton 1921). The warming effect of oxygen at great altitudes is most noticeable. The heart, once more supplied with sufficient oxygen, regains its normal rate and output. When the supply of oxygen is deficient, the skin bears the brunt and in paroxysmal tachycardia may be almost devoid of oxygen and perfectly predisposed to frostbite.

"I think," Barcroft wrote, "of a comfortable bedroom in Trinity College, Cambridge; the subject of our research on tachycardia, having found exercise 'impossible' and life 'insupportable' elsewhere, has crawled into bed, and in spite of all that outside

comforts can do to warm him he lies there with skin cyanosed and cold. Then my mind travels to somewhere within a thousand or so feet of the summit of Everest and I conjure up two other figures, their hearts also perhaps beating at 200 a minute, the blood congealed in their skins; but, in a place where stagnation means inevitable frostbite, they too found exercise impossible and life insupportable,—but in their cases, alas, these phrases bore a literal significance—how literal all the world knows."

With these words fresh in my mind, it was natural that when faced with several cases of frostbite at an altitude of 23,000 ft. I should try the effects of oxygen (Greene 1934). The results came up to expectations. The experiment was a small one, but the benefit of inhaling pure oxygen from a face-piece was so definite that there is no longer any doubt that it should be administered at the earliest possible moment in any case of frostbite above sea level on a mountain or in an aeroplane.

PROPHYLAXIS

The prevention of frostbite and trench foot is often possible, even in the worst conditions. There are certain people who should never be allowed to run the risk of getting them. Malnutrition, physical exhaustion, general illness, especially cardiac conditions, diabetes, and peripheral vascular diseases are recognised predisposing causes. Previous attacks increase personal susceptibility. It is unlikely that such considerations would apply often to armies in the field, but they must be considered in civilians rendered homeless by invasion or bombardment.

Clothing is of the utmost importance. In New York the average number of city labourers who suffered in each winter 1933–35 was 393. Proper clothing, especially gloves and ear-flaps, having been provided, the average for the next two years fell to 186, despite a larger number of workmen and equally severe conditions (Brahdy 1937). Gloves must be kept dry. Many mountaineers wear a waterproof covering over their woollen or fur gloves. Constriction of the circulation to any part must be avoided. The disappearance of puttees should reduce the incidence of trench foot, but the danger of ill-fitting boots is often forgotten. The greater prevalence of frostbitten feet among the porters than among the climbers on Himalayan expeditions is usually ascribed to carelessness, but it must be remembered that the porters are usually provided with ready-made boots, the climbers having boots made to measure. It is not enough that the boots should be large enough; they should be supple, and there should be no pressure points. Sepsis after frostbite commonly develops in the corn-bearing areas or above the metatarsophalangeal joints in a line which corresponds exactly with the hard flexure across the uppers of unoiled boots. The boots of men in the trenches should be kept supple by the frequent application of soft paraffin or of heavy oil. Darned socks are dangerous. Wet socks should be dried at every opportunity. The wearing of several pairs of socks is to be recommended only when the boots are large enough to take them without feeling tight. The body must be kept warm. We have more than common knowledge of the association of a warm body with warm extremities, for Lewis (1931) has shown that the vasodilatation which is the natural reaction in fingers exposed to cold may fail if the body is chilly. Smith, Ritchie, and Dawson (1915b) recommended that during wet and cold weather an effort should be made to keep as short as possible a man's spell in the trenches, forty-eight hours being suggested, and that no man with premonitory symptoms should return to the front line. In considering what constitutes wet and cold weather we may refer to experiences in past wars and in cold spots in peace-time. Baron Larrey, during Napoleon's retreat from Moscow, observed that there were more cases during a thaw than when the frost was hard. I am told that in the last great war the same thing was noticed, trench foot being common when the temperature was only slightly below freezing-point. On the other hand, men working in dry conditions in the streets of New York rarely suffer, even in a strong wind, if the temperature is above −4·4° C. In a strong wind cases are common up to a temperature of −9·9° C. Only if the temperature falls below −13·3° C. do cases occur in the absence of wind (Brahdy 1935). Lake (1917) regards −6° C. as the critical temperature above which true frostbite does not develop.

TREATMENT

Treatment of the acute stage, which may conveniently be defined as the time during which the affected part is regaining its warmth, has undergone a complete change in recent years. It has been recognised, certainly since the Napoleonic wars, that heat greater than that of the human body is extremely harmful. Clouston (1939) tells a story of a mother who, with instinctive knowledge, seized her child from before the fire and put its frozen feet between her breasts. The danger of fires, hot-water bottles, and hot-water baths is obvious, for the stagnant circulation of the frozen part is incapable of carrying away this heat. Smith, Ritchie, and Dawson (1915a), in their experiments with rabbits, have shown that, when the tissues of the feet have been damaged by cold, water at only 37° C. will cause a rapid œdema or will greatly increase an œdema already present. Treatment with warm water was followed by diffuse infiltration with red corpuscles and sometimes by hæmorrhage, the damaged blood-vessels giving way under the strain of the congestion. Lewis and Love (1926) have shown that the transudation may be excessive and injurious, and they even suggested the advisability of obstructing the circulation to frostbitten parts during the stage of thawing to prevent the damage which nature, often assisted by well-meaning but ignorant persons, is liable to cause. Lake (1917) had already drawn attention to the evil effects of this transudation and had suggested the use of vasoconstrictor drugs to reduce the head of pressure on the capillaries, a suggestion to which the practical difficulties are obvious. In my view, rubbing the affected parts, even with snow, is extremely dangerous. Apart from the danger of increasing the congestion, there is the danger of further harm to the damaged, delicate, and perhaps brittle tissues. It may well be that many of the hæmorrhagic blebs so often seen are due less to the frostbite than to the traditional treatment. Before experience drove home to me this lesson, I have both rubbed and been rubbed. The pain of returning sensation to feet even slightly frostbitten is an index to the damage done. I am profoundly suspicious of the advisability of using at this stage the machine for passive muscular exercise now in favour in America (Hermann and Read 1933, Shipley and Yeager 1934, Murphy 1937). I have never seen it in use and am therefore most diffident in my criticism, but it appears to be a dangerous weapon capable of increasing the damage already done by cold or transudation.

From the first, therefore, the susceptibility of the tissues to further damage by warmth or by mechanical injury should be remembered. The frostbitten part should be kept absolutely at rest or as near to this

ideal as circumstances permit. It should be thoroughly but most gently cleaned and wrapped in dry sterile dressings and in many layers of wool. Whether or not abrasions are present, antitetanic serum should be given. The patient should be given hot drinks and extra clothes and should be removed as soon as possible, by stretcher if the feet are involved, to a place of warmth and comparative comfort. Alcohol should not be given, owing to the peripheral dilatation which it produces. If it is impossible to move the patient, there is no better way of warming him than by the close contact of another human body.

Thereafter treatment should aim at avoidance of infection, absorption of the exudate, and restoration of the vascular condition. Whether anything can be done about the last two seems doubtful. Short-wave treatment has, as one would expect, its advocates (Bürkmann 1934). Complete rest, bodily comfort, sufficient sleep, and good food will ensure the recovery in the slighter cases. At this stage the machine for passive muscular exercise, already referred to, might conceivably be useful, but further trials are necessary. If gangrene develops, the usual surgical principles are followed, but it should be remembered that the line of demarcation may be slow in forming and appear to be considerably more proximal than the true level, the skin being destroyed over a wider area than the deeper structures. I have seen a case in which the legs were apparently gangrenous to a level 3 in. above the ankle. Amputation was delayed for about two months, and finally only the little toes and the terminal phalanges of the others were removed. A porter on the 1933 Everest expedition had two fingers black, hard, and painless as far as the proximal interphalangeal joints. After a time he refused to wear dressings, which interfered with the use of his wood-hard fingers as drumsticks. So far as I know, they were never amputated. If sepsis is avoided, there should be no hurry to resort to surgery.

SUMMARY

Frostbite and trench foot are essentially the same condition, the one resulting from extreme cold alone or in association with a high wind or with a deficiency of oxygen, the other from lesser degrees of cold with damp and muscular inactivity. In both disorders the damage is due primarily to cold and secondarily to transudation from the blood-vessels. In treatment it is essential not to increase the transudation by the local application of warmth or by rubbing. Emphasis is laid on prophylaxis, extreme gentleness, complete rest, the avoidance of sepsis, and, when frostbite develops at altitudes above sea level, the inhalation of pure oxygen from a face-piece.

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RICKETTSIA DISEASES OF MALAYA

IDENTITY OF TSUTSUGAMUSHI AND RURAL TYPHUS

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II

MORBID ANATOMY AND HISTOLOGY

Autopsies were made by one of us in 12 fatal cases (see Lewthwaite 1936). All 12 patients had contracted the disease in endemic areas and had had a typical clinical syndrome and a positive Weil-Felix reaction. Naked-eye examination gave no consistent characteristic feature.

Heart: in 5 cases the myocardium was pale; there were subserous petechial hæmorrhages beneath the epicardium and endocardium in 4 cases. Lungs: there were small punctiform subpleural hæmorrhages in 11 cases, bilateral and deep congestion in 7, much œdema in 5, and bronchopneumonia in 3. Kidney: in 4 cases cloudy swelling was evident, in 5 there was injection of the surface vessels, and in 1 there were petechial hæmorrhages throughout the whole renal substance and pelvis. Liver: in 3 cases cloudy swelling was considerable, in 3 subcapsular petechiæ were present, in 8 there was considerable fatty degeneration, and in 5 the liver was enlarged. Lymphatic glands: in 3 cases there was slight and in 7 considerable enlargement, accompanied by much congestion in 3. The bronchial and the retroperitoneal glands were most affected. Spleen: in 11 cases the spleen was enlarged, the weights being two to five times the normal. Most of the patients had probably had one or more attacks of malaria. In 8 cases the spleen was diffluent, in 3 to a degree resembling the acute septic spleen. Brain: the only gross change was subdural hæmorrhage, which was found in 2 cases. In each it was extensive and unilateral. Minor changes were congestion of the surface vessels in 6 cases and an increase in the cerebrospinal fluid in 5.

Histological examination was limited to the brain, the most important organ in the microscopical diagnosis of human material from the typhus group of fevers. In all, 7 brains were examined; 8 blocks of tissue were taken from each and serial paraffin sections cut and stained by Giemsa's method. Descriptions of the morbid histology of the human brain in typhus exanthematicus and Rocky Mountain spotted fever, reported by many workers, show unanimity in that the typical lesions, however much they may vary in appearance, are related to injury of the capillaries and arterioles of the brain.

In tsutsugamushi the findings in the human brain are meagre; but all lesions found in typhus exanthematicus and Rocky Mountain spotted fever have been found in one or other of the 7 brains studied; they differ only in being smaller and fewer. Some pathological change could be found in every brain, but lesions that could be regarded as pathognomonic were absent in 2 and scanty in the other 5. They were found in each of the 8 areas examined but were most numerous in the pons and medulla and least in the cerebellum.

The commonest lesion is a perivascular proliferation of neuroglia cells, one or two cells in depth, along the course of capillaries and arterioles that show swelling of their endothelial cells. Less common is a lesion that is essentially only a greater degree of this perivascular proliferation and includes a few cells indistinguishable from lymphocytes. The proliferation is usually irregularly distributed along the course of

the vessel; the lumen may be patent, or vascular injury may have led to extravasation of blood and collapse of the lumen. Again, a thrombus may have formed, with consequent degeneration of the vascular elements, so that the lesion now consists of a clump of neuroglia cells in which lie lymphoid cells, pyknotic fragments of nuclei, and occasionally one or more degenerate erythrocytes or remnants of the lumen of a vessel. Such is the development and structure of the typhus "node."

Besides these hæmorrhagic extravasations, small perivascular hæmorrhages from capillaries and arterioles were often seen. The endothelial lining of the smallest vessels was often deeply pigmented, presumably owing to phagocytosis of broken-down erythrocytes. Throughout the cerebral cortex there was a general increase of cellular elements, most of which were neuroglia cells, but a few were leucocytes.

Demonstration of rickettsia in the brain.—Rickettsia bodies were seen in the vascular lesions in 5 out of the 7 brains. They appear as rounded, ovoid, or lanceolate bodies, usually clearly diplococcal in arrangement. Occasionally, owing to the component elements being set at different depths of focus, there is apparent inequality of size and staining. The size varies appreciably with the intensity of staining, but the average dimensions of the paired organism may be given as 1–1·5 μ long and 0·2–0·3 μ broad. Stained by Giemsa's method they are deep blue with heavy staining or purple with light staining.

The lesions containing undoubted rickettsia bodies are very few, but once they have been found in a lesion which can be followed in serial sections their study is facilitated. They are found in three situations: (1) most commonly within the cytoplasm of the endothelial cells of the otherwise uninjured

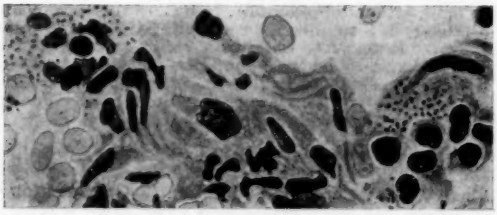

FIG. 2—Human brain. Section of pons. Arteriole shows collapse of lumen, extravasation of blood, and perivascular proliferation. Two clumps of Rickettsia bodies are seen, lying close to nuclei. Giemsa (× 1100.)

capillaries and smaller arterioles and usually in pairs in rows parallel with the long axis of the cell; (2) intracellularly or extracellularly, if shed from the cells as a result of injury (fig. 2), in the walls of similar vessels, injury to which has been followed by hæmorrhagic extravasation and collapse; and (3) in mononuclear cells of the perivascular nodes (Wolbach et al. 1922), though this is rare. The morphology and staining of these rickettsia bodies resemble closely those of the rickettsia bodies which can be found with ease and in abundance in smears from rabbits and guineapigs infected experimentally with the tsutsugamushi virus. They appear to be indistinguishable from the *Rickettsia orientalis* shown by Nagayo et al. (1931) to be the causal organism of tsutsugamushi in Japan.

EPIDEMIOLOGY

Season and climate.—British Malaya lies just north of the equator, between lat. N. 1° and lat. N. 6°. The temperature of the west coast, whence came all but 7 of the cases in our series, has only a small daily range, varying from a maximum of about 95° F. to a minimum of about 70° F. There is little appreciable seasonal variation. In Malaya the disease is apparently not seasonal; every month of the year has its quota of cases, and there is no consistent preponderance in any one month. Comparison of incidence with rainfall during twenty-eight consecutive months did not show any significant correlation. There was a slight fall in incidence during the driest period of the year—namely, May to August—but we attach little or no significance to this observation.

Race.—Fletcher and Lesslar (1925) noted that it was the association with a particular kind of employment and certain circumscribed areas that caused the uneven racial incidence. Most of our cases came from oil-palm estates, and most of the labourers on these estates are Tamils.

Sex and age.—Males exceed females by more than two to one. In children below working age tsutsugamushi is extremely rare, yet the labourers' hutments abound with children. The incidence falls evenly among the ten-year age-groups of labourers in an endemic area.

Distribution.—Fletcher and Lesslar (1925) have described the association of the virus with waste lalang-covered grazing ground and its persistence in certain circumscribed areas of such land. In one of these areas overgrown with lalang 6 European soldiers were infected while in camp; further cases occurred later among carters and cow-herds who pastured their cattle there. From similar grazing land some twenty miles away came the earliest cases of tsutsugamushi in the latter half of 1924. Another case occurred in this area in April, 1927, and 4 more in December, 1928; all the patients were either Sikh or Pathan cattle drovers. The most instructive endemic area has been Oil-Palm Estate, which from June, 1926, onwards yielded an unbroken succession of cases month by month for some years. During two and a half years we studied intensively certain aspects of the epidemiology of tsutsugamushi on this estate.

Occupation.—Without exception, every victim of tsutsugamushi in our series had had contact with the country-side at some time during the weeks before the illness, especially with land bearing lalang or other undergrowth. More than half our patients were employees of Oil-Palm Estate. The remainder were cow-herds and employees working on rubber estates, roads, or railways; the 4 Europeans who were not planters were a surveyor, a police officer in a rural area, a game-warden, and a man who had been shooting over Oil-Palm Estate a week before the onset of his symptoms. On Oil-Palm Estate the heaviest incidence was among those who worked with the worthless products at the base of the palm-trees; the next heaviest was among weeders who worked close to the tree; factory hands and people working in and round the hutments never contracted tsutsugamushi (see Lewthwaite 1930a). It was evident that the disease could be classed as occupational and that the vector lurked at the foot of the trees among the dead male and female flowers and bunches of overripe fruit that lay there rotting in the damp and shade. Moreover, as the gnawed bunches of fruit testified, rats (the reservoir of the rickettsia) foraged for food at the base of the trees. When the work at the base of the trees in any area was completed, the incidence of tsutsugamushi waned; when work at the base of the trees began, the incidence soared.

The vector.—The principal vectors of the typhus-like fevers throughout the world fall into four main groups: body lice, ticks, rat fleas, and larval mites.

Extensive examinations of healthy and sick labourers in areas in which tsutsugamushi was endemic did not discover a single body louse (Gater 1930); school-children are free from them; victims of tsutsugamushi are nursed in the general wards of hospitals without transference of infection to others; it is certain, therefore, that the body louse plays no part in the transmission of tsutsugamushi.

Ticks are known to be the carriers of typhus-like fevers in North and South America, South Africa, India, and Europe. We made a series of exhaustive experiments with two species of ticks—namely, the American wood tick, *Dermacentor andersoni*, and the dog tick, *Rhipicephalus sanguineus*. *D. andersoni*, which, so far as is known, is not found in Malaya, is the most important vector of the Rocky Mountain spotted fever. We used it so that, if it should become infected, the tsutsugamushi virus might be sent in the tick to America for comparison with the many typhus strains there available. *R. sanguineus* is the most important vector of the *fièvre boutonneuse* of the Mediterranean littoral and of African tick typhus. Guineapigs and white rats experimentally infected with tsutsugamushi virus were used as a source of virus. The technique and results have been published elsewhere in full (Lewthwaite and Savoor 1936c). In no case was it possible to recover the virus from a guineapig or a rat after infection had been attempted by refeeding or inoculation of ticks previously fed on an experimentally infected animal. However, a lessened mortality among the guineapigs subjected to attempted infection was seen after test inoculation with passage virus; this finding makes it difficult to exclude entirely the possibility that ticks may play a minor part in the epidemiology of tsutsugamushi.

The rat flea, *Xenopsylla cheopis*, is known to transit the virus of some of the typhus-like fevers in America, North and South Africa, and Europe. Further, we have shown that in the laboratory it unfailingly transmits the virus of the urban (or shop) typhus of Malaya, and that the virulence of the virus is thereby enhanced. For tsutsugamushi virus attempted transmission in the laboratory has shown that the part played by the rat flea (*X. cheopis*) is insignificant. Many series of experiments were made (Lewthwaite and Savoor 1936f) on guineapigs fed on a vitamin-deficient diet; on white rats fed from birth on a diet deficient in vitamin A and bred from parents similarly fed; and on rabbits (the most susceptible laboratory animals when inoculated by the intra-ocular route). In one series of experiments on guineapigs the evidence suggested that the flea might have a feeble power to transmit the tsutsugamushi virus; but in another series and in the experiments on rabbits and white rats no evidence of transmission was forthcoming.

A larval mite, *Trombicula deliensis*, is almost certainly the vector of tsutsugamushi in Malaya. Fletcher, Lesslar, and Lewthwaite (1928), in an investigation of the reservoir (the rat), trapped 130 rats in endemic and non-endemic foci and found this larval mite only in rats from endemic foci (with one exception). In one endemic focus the mite was found more often in a particular area from which most of the cases came. Gater (1930) examined 743 wild rats—half from this same endemic area and half from the town of Kuala Lumpur—month by month for a year. He found on the town rats only three trombidiid mites known to attack man. *T. deliensis* was found on 21·3 per cent. of the rural rats. Further, he suggested that *T. akamushi* and *T. deliensis* were merely forms of the same species. These two larval mites are respectively the vectors of tsutsugamushi in Japan and the closely allied (if not identical) mite fever of Sumatra. *T. akamushi* was by far the commonest ectoparasite found by Gater on labourers in the endemic area.

The reservoir.—This concentration of the probable vector on the rats of an endemic area strongly suggests the rat as a likely reservoir of the virus. Anigstein (1933), examining rats from this same area, found microscopical evidence of a scrotal reaction and of rickettsia bodies in the tunica vaginalis.

Nicolle (1933) drew attention to a distinction between the virus of old-world typhus (*le typhus historique*) and that of rat typhus (*le typhus murin*) founded on success or failure to propagate them in the white rat. Whereas the former could not be maintained by him beyond the thirteenth passage in three

FIG. 3—Abdomen of macacus monkey inoculated intradermally with tsutsugamushi virus from a strain derived from a patient with an initial ulcer. Ulcers show well-marked central necrosis. Note the identical appearance of these dermal lesions and of those shown in fig. 4.

separate series of white rats, the rat typhus could be maintained thus indefinitely. We maintained, with no loss of virulence, a strain of tsutsugamushi, isolated from man, through twenty-one generations of white rats, at which point the investigation was arbitrarily terminated. By Nicolle's criterion tsutsugamushi was thus shown to be derived from rats. We sought additional evidence (Lewthwaite and Savoor 1936b). In one investigation twenty-three attempts were made to isolate, in the guineapig, strains of tsutsugamushi from wild rats trapped in particular houses or circumscribed areas from which human cases had recently come. Three succeeded, and two strains were studied exhaustively. Among other signs of infection were scrotal swelling and the abundance of intracellular rickettsia bodies (the causal agent of tsutsugamushi) in the tunica vaginalis. In rabbits inoculated with virus from infected guineapigs agglutination of the OXK type of proteus X strains to titres as high as 1 in 1700 and 1 in 1925 was obtained. One strain was established and maintained without difficulty in rabbits by the intra-ocular injection of virus. Cross-immunity tests made in rabbits between this rat strain and five strains isolated from men showed a complete reciprocal cross-immunity with four strains and a partial cross-immunity with the fifth strain.

This evidence indicates conclusively that the rat is a reservoir of tsutsugamushi in Malaya.

EXPERIMENTAL INFECTION OF ANIMALS

The early attempts made in Malaya to establish and maintain strains of tsutsugamushi in laboratory animals were frustrated by the insusceptibility of the guineapig, rat, and rabbit. So attempts by Fletcher and Lesslar (1925), Anigstein (1933), and Lewthwaite (1930b) to isolate strains from upwards of 250 patients met with meagre success. Later we (Lewthwaite and Savoor 1936a) used three modifications of procedure which overcame this insusceptibility sufficiently to permit study of strains: the use of vitamin-deficient

guineapigs, the inoculation of rabbits by the intra-ocular route, and the intradermal inoculation of monkeys.

Guineapigs were fed for some days before and after inoculation on a diet of water, autoclaved skimmed milk, and rolled oats—a diet recommended by Zinnser et al. (1931) for enhancing the virulence of experimental infections with the endemic Mexican-American typhus. Still we failed, save for one notable exception. From 1 patient, by inoculation of blood drawn

FIG. 4—Abdomen of macacus monkey inoculated intradermally with virus of a "rural-typhus" strain derived from a patient in whom an initial ulcer was not found. Ulcers show well-marked central necrosis. (*cf.* fig. 3.)

early in the fever, a strain was established and maintained at first precariously by passage of infected tissues for the first few generations and then more easily, until eventually the vitamin-deficient diet became unnecessary. This strain has now been maintained in guineapigs for eight years without loss of virulence. The inoculum is usually brain tissue, less often heart blood, splenic tissue, or ascitic fluid. Of guineapigs injected thus intraperitoneally 90 per cent. die; use of the subcutaneous route diminishes this mortality. The clinical signs are an incubation period of seven to twelve days, followed by continuous fever, which may persist for nine days but more often ends by sudden defervescence and death about the fifth day of fever. Constant post-mortem signs are ascites and enlargement of the spleen. Rickettsia bodies are abundant in the ascitic fluid, especially in the fibrinous deposit usually present on the surface of the spleen, and their numbers increase with each succeeding day of fever. Typhus nodes may rarely be found in sections of the brain. Guineapigs that recover are immune for at least fifteen months. This strain came from a patient who had no visible lesion at the time of examination; we wish to emphasise the fact that strains isolated from patients with a dermal lesion, though they could not be long maintained, gave the same clinical and post-mortem signs of infection in reacting guineapigs of the early passages.

Rabbits.—Intraperitoneal injection of infected human blood or of passage virus into rabbits led to a positive Weil-Felix reaction in about half the cases. The titres are lower than those given by human convalescent sera. Only the OXK type of proteus X strains are agglutinated. No other sign of infection is evident. Attempts to establish strains by intratesticular inoculation of virus failed. We then had recourse to the method of intra-ocular inoculation practised by Nagayo et al. (1931) with the viruses of tsutsugamushi of Japan and typhus exanthematicus. Success was immediate. Injections of infected human blood from patients seen early in the disease yielded strains. The guineapig strain can be transferred at will to rabbits by similar injection of infected blood or of ascitic fluid. A full account of the technique and results has been published elsewhere (Lewthwaite and Savoor 1936a). After an incubation period an intense iridocyclitis develops in the inoculated eye, and agglutinins of the OXK type appear in the serum of about half the rabbits. The causal rickettsia can readily be demonstrated at the height of ocular reaction in the cells of the endothelium covering Descemet's membrane at the back of the cornea. By successive inoculations of infected aqueous humour strains may be maintained with ease. Fever is fitful or absent, and the rabbits recover and are immune for at least twelve months. These signs and sequelæ of infection are the same whether the strain has originated from a patient with a dermal lesion or from one in whom such a lesion has not been found.

White rats.—Infection of the white rat by our stock strain of tsutsugamushi is readily secured but is *inapparente* in type; fever is insignificant or absent, and scrotal swelling is never seen. At necropsy the only constant finding is enlargement of the spleen; but ascites and a fibrinous exudate on the spleen are often present, and smears of these yield a few rickettsia bodies. Most of the infected rats die about the end of the second week.

Monkeys.—In the first part of this paper we noted that a patient infected with tsutsugamushi might have a small ulcer, typical in its black necrotic centre and surrounding red areola, that marked the site of inoculation by the insect vector. We noted also that until recently the presence of this ulcer differentiated tsutsugamushi from the rural form of tropical typhus. As our experimental work progressed, however, we were impressed by the identity of these supposed clinical entities in all other features, and to obtain experimental evidence about this apparent difference we inoculated monkeys and rabbits intracutaneously with strains derived from human cases of each clinical group.

One gibbon and three macacus monkeys were inoculated thus on either side of the abdomen with infected material from the eyes of rabbits; the strain was derived from a patient with an initial ulcer. Infection resulted in all, being shown by fever, leucopenia, a positive Weil-Felix reaction, and dermal lesions at the sites of inoculation. These lesions passed through macular and papular stages, and in the macacus monkeys, but not in the gibbon, progressed further to end as small circumscribed ulcers, with black necrotic centres and surrounding hyperæmic areolæ (fig. 3). Swelling of the inguinal glands coincided with the development of necrosis in one monkey only.

One gibbon and six macacus monkeys were inoculated similarly with infected material from strains derived from a patient in whom no initial ulcer was

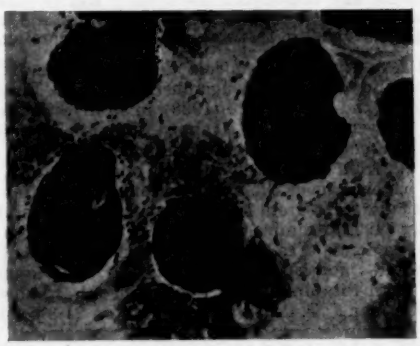

FIG. 5—Smear of scraping from the endothelium covering Descemet's membrane in the reacting eye, taken from a passage rabbit inoculated intra-ocularly with tsutsugamushi virus from a strain derived from a patient with an initial ulcer. A group of endothelial cells is seen, together with abundant rickettsia bodies, mostly intracellular, some extracellular. Note the identical appearance of these bodies and of those shown in fig. 6. (×1300.)

present when seen by us after the onset of the illness. The inoculum consisted of ascitic fluid from an infected passage guineapig in five cases, and of infected material from the eyes of passage rabbits in two cases. All seven monkeys developed an infection manifested by precisely the same signs as those described above; the dermal lesions in the gibbon and in four of the macacus monkeys progressed beyond the papular stage to end as necrotic ulcers (fig. 4); swelling of the inguinal glands developed in three.

Thus the experimental infections in gibbons and monkeys infected with virus from either clinical type were identical.

RICKETTSIAL NATURE OF THE VIRUS

Anigstein (1933) reported the finding of rickettsia bodies in the tunica vaginalis of a guineapig that had reacted to inoculation with the passage virus of a strain derived from a human patient with tsutsugamushi; since the patient had no primary ulcer, the case was at that time classified as scrub typhus. Subsequently we demonstrated rickettsia bodies constantly in laboratory strains derived from human patients with and without the primary ulcer, and

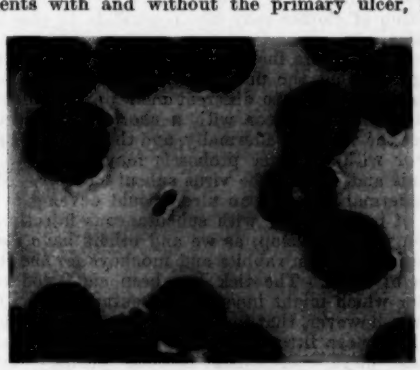

FIG. 7—Photomicrograph of pneumococci in the blood of a mouse, for comparison of the dimensions of pneumococci with those of the rickettsia bodies of tsutsugamushi. (× 1700.)

less frequently in the brains of fatal cases of tsutsugamushi in man. Ascitic fluid, especially scrapings of the peritoneum, from passage guineapigs contains abundant rickettsia bodies, as also do scrapings of the endothelium lining Descemet's membrane from the reacting eye of passage rabbits (figs. 5–7). In smears stained by Giemsa's method rickettsia bodies are seen lying within the cytoplasm of endothelial cells, mostly grouped as one or more clusters near the nucleus; rarely, extracellular forms are seen, apparently shed from ruptured cells. They are short rod-shaped bacilli showing bipolar staining. The polar granules are coccoid, purple, and connected by a narrow rod that stains blue. Average dimensions are 0·8–2·0 μ × 0·3–0·5 μ. In morphology, distribution, and staining characteristics they are identical with the *R. orientalis* described by Nagayo et al. (1931) as the causal organism of tsutsugamushi of Japan.

CROSS-IMMUNITY TESTS

In an investigation in laboratory animals of the identity or otherwise of two strains of a disease the most convincing test is that of cross-immunity. We (Lewthwaite and Savoor 1936d) therefore paid particular attention to this test, using guineapigs, rabbits and monkeys. In each test reported below one or more control animals were inoculated and reacted typically.

Guineapigs.—One strain derived from a patient in whom no initial ulcer was seen and two strains from patients with such an ulcer were used. The first of these has been firmly fixed for many years; the second and third strains became attenuated and were lost, but they furnished a sufficient number of reacting and immune animals to enable cross-protection tests to be done. The criterion applied was failure of a convalescent guineapig to react with fever when inoculated with the virus of another strain. Eleven tests were made and showed cross-immunity between the strains to be complete and reciprocal.

FIG. 6—Smear of fibrin covering spleen, taken from a passage guineapig inoculated intraperitoneally with virus of a "rural-typhus" strain derived from a patient in whom an initial ulcer was not found. A group of endothelial cells is seen, with abundant intracellular rickettsia bodies (*cf.* fig. 5). (× 1700.)

Rabbits.—The strains used were of the same two types as above. Three criteria were relied on: iridocyclitis, a positive Weil-Felix reaction, and, in a few cases, a dermal lesion at the site of inoculation.

Twenty-four rabbits that had developed a complete and identical iridocylitis after intra-ocular injection, some with the first type of strain and others with the second type, were reinoculated in the other eye, a month or more later, with an inoculum of the other type of strain. Cross-protection was complete and reciprocal. Five rabbits that had given a positive Weil-Felix reaction after intraperitoneal inoculation with one type of strain proved to be immune when reinoculated intra-ocularly with the other type of strain.

Weil and Felix (1921) showed that, in louse-borne typhus of East European origin, when rabbits that have acquired an immunity to typhus are reinoculated with a homologous strain, the X 19 agglutinins produced as a result of the primary infection are not restimulated. Felix (1933) emphasised the value of this test in the comparison of two strains of typhus virus; we applied it in our investigation. Eighteen rabbits that had developed a positive Weil-Felix reaction after inoculation with the virus of either the first or the second type were reinoculated, some with the homologous virus and others with the heterologous virus, some intra-ocularly and others intraperitoneally. A rabbit was presumed to be immune if there was no significant rise of agglutinins during sixty days after inoculation. In seventeen there was no significant rise of agglutinins; in one OXK agglutinins developed to a degree slightly higher than the initial one.

Six rabbits that had previously reacted to intra-ocular inoculation of a strain derived originally from a patient with a primary ulcer were reinoculated intracutaneously with a strain derived from a patient in whom no ulcer had been found. In none did a dermal lesion develop, whereas typical dermal lesions developed in control rabbits. The immunity acquired lasted for at least a year.

Thus in the rabbit cross-protection is complete and reciprocal, between strains of either clinical type,

whether inoculation is by the intra-ocular, intraperitoneal, or intradermal route, and whether the criteria are clinical (iridocyclitis and dermal lesion) or serological.

Monkeys.—A gibbon was inoculated intracutaneously with a strain derived from a patient with a primary ulcer; it reacted typically developing the four cardinal signs of infection in the monkey: febrile reaction, dermal lesion, leucopenia, and agglutinins for the OXK strain of proteus. Three months later it was reinoculated, together with a control macacus, by the same route with a strain derived from a patient in whom no primary ulcer had been found. There was no reaction other than a mild leucopenia in the reinoculated animal; but in the control all four criteria of infection developed.

Thus the foregoing cross-protection tests in the guineapig, rabbit, and monkey are in entire accord. They indicate that cross-immunity is complete and reciprocal between strains derived from human patients with an ulcer and from those in whom an ulcer has not been found.

DISCUSSION

All the known features of ætiology, epidemiology, serology, experimental pathology, and immunology point to the identity of strains derived from human cases of either clinical type; apart from the primary ulcer, the clinical syndrome of the two types in man is also identical. In the face of such evidence we think that an initial ulcer with attendant bubo is not enough to justify the separation of these cases from those in which no ulcer is found (hitherto termed rural or scrub typhus). We are convinced that the two clinical types are not separate entities but one and the same disease, in which the dermal lesion varies in duration and degree of evolution, being conspicuous, necrotic, and persistent in some cases; whereas in others it is inconspicuous, papular only, and fleeting, usually escaping recognition by completing its evolution before the onset of other symptoms and signs. As noted earlier, Schüffner suggested this possibility many years ago in tsutsugamushi in Sumatra.

In support of our conviction we wish to draw attention to certain of our observations on the dermal lesion. Earlier in this paper we described a fatal case in a European, unique in our experience, in that the dermal lesion was a tiny abraded papule which disappeared as early as the eighth day of illness. On the darker skin of an Asiatic it would almost certainly have been overlooked. Had the patient not been seen until the eighth day of illness, the case would have been classified as one without initial lesion and therefore as rural typhus. Yet the lesion was entirely comparable to the dermal lesion obtained experimentally in rabbits and monkeys—i.e., a papule which often does not progress to necrosis.

Consideration of the incidence of cases with an initial ulcer and of cases in which no ulcer was found in the labour force of an estate affords cogent evidence for the identity of the two clinical types. Thus Fletcher et al. (1928) reported both types from the same endemic area of an estate. Wolff and Kouwenaar (1936) reported from Sumatra that rural typhus and Sumatran mite fever (in which there is an initial ulcer) occurred in the same population group of estate labourers.

In our experience there have been among Europeans 10 cases with an ulcer for 1 without; among Asiatics 1 case with an ulcer for at least 40 without. The record of cases on a certain estate where both clinical types have appeared regularly for the past twelve years yields decisive evidence, in our view, on this problem of the initial lesion. Of the 7 European managers 5 have been infected, and an ulcer was found in 4 of them, whereas among the Tamil labourers supervised in the field by these Europeans more than 200 have been infected, yet in 2 only was an ulcer found. It is inconceivable that two viruses that were separate entities should show such a sharp racial discrimination between Europeans and Asiatics working together in the same area. Every line of investigation has converged to the conclusion that one and the same virus causes both clinical syndromes.

The disparity in the incidence of the ulcer according to race remains to be explained. In part it may be due to difficulty in finding an inconspicuous lesion on the dark skin of the Tamil. In part it is bound up with the greater sensitivity of the European to slight injury of the skin. The Tamil labourer wears scanty clothing while working, and constant exposure causes him to be less sensitive than the European to abrasions and bites. The European unaccustomed to such exposure, because he wears more clothing, is prone to scratch the site of an insect bite and thereby enlarge it and introduce secondary infection. Friction of clothes may also contribute to this local trauma.

Some observers, including ourselves, have in the past suggested that the uncertain incidence of an initial ulcer may be due to different modes of inoculation: that an insect vector with a short proboscis may inject the virus intradermally, and that another insect vector with a longer proboscis may penetrate the dermis and deposit the virus subcutaneously. With intradermal injection an ulcer would develop at the site of inoculation; with subcutaneous injection no lesion would develop, as we and others have shown experimentally in rabbits and monkeys for the OXK type of virus. The tick has been suggested as a vector which might inoculate subcutaneously. It is known, however, that in India, South Africa, and the Mediterranean littoral endemic typhus fevers, in the clinical picture of which necrotic primary ulcers frequently develop, are transmitted by a tick. It is no longer necessary to postulate two insect vectors and two routes of inoculation; our conception, based on human and experimental infections, of gradations of damage ranging from an ephemeral insignificant papule to a persistent well-defined necrotic ulcer, after intradermal inoculation, explains the presence or absence of a dermal lesion when the patient is first examined.

The same uncertain incidence of an initial ulcer is found in other fevers of the typhus group. Morishita has personally informed us that the initial ulcer is not always found in tsutsugamushi in Formosa. Kawamura et al. (1935) have reported similarly. Such cases without an ulcer have hitherto been classed in Malaya as rural typhus, but in Formosa they are regarded as tsutsugamushi. Lépine (1936), discussing a paper by Lewthwaite and Savoor (1936 *g*), said that in *fièvre boutonneuse* the initial ulcer might be present or absent. Megaw (1936), in the same discussion, said that in a case of tick typhus in India he had seen an initial ulcer (with attendant bubo) at the site from which a tick had been removed, although in most cases of this typhus-like fever no ulcer could be found. Unwin (1935), reporting his 1500 cases of endemic tropical typhus (coastal fever) from North Queensland, wrote: "On close examination of many cases I have been able in several instances to find definite signs of an insect-bite, with its black central eschar and surrounding red areola." Thus the uncertain incidence of the initial ulcer in the endemic typhus fevers is not peculiar to tsutsugamushi of Malaya.

SUMMARY

(1) Hitherto tsutsugamushi and the rural form of tropical typhus (scrub typhus) have been thought to be separate diseases in virtue of the presence of a primary dermal lesion and attendant bubo in tsutsugamushi and their supposed absence in rural typhus.

(2) Their clinical picture, pathology, ætiology, and epidemiology are described, and the results of experiments are recorded. From consideration of these, especially of cross-immunity tests between strains of the two clinical types, the conclusion is drawn that one and the same virus may cause various gradations of dermal lesion, and that tsutsugamushi and rural typhus are identical. Rural typhus not being a disease sui generis, this term should be discarded and the older term " tsutsugamushi " retained.

For permission to reproduce the various figures we wish to thank Dr. A. Neave Kingsbury, director of the Institute for Medical Research, F.M.S., and Dr. J. W. Field for fig. 1, taken from *Bulletin* No. I of 1927 from that institute ; the editor of the *Journal of Pathology and Bacteriology* for fig. 2 ; and the editor of the *British Journal of Experimental Pathology* for figs. 3–7.

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Sir Stanley Woodwark has been appointed senior physician to the Westminster Hospital in succession to Dr. Hildred Carlill. Dr. Carlill has been a member of the honorary staff of the hospital for 22 years.

ARRANGEMENTS have been made to provide Scotland with a bacteriological service for the duration of the war based on the central laboratories established at the four Scottish universities and under the general supervision of the professors of bacteriology. In addition, subsidiary laboratories have been set up at various centres. Most of these are existing institutions, but three are, in effect, new. Provision has also been made for setting up emergency laboratories in remote districts in the event of serious local outbreaks of infectious disease.

TREATMENT OF PNEUMONIA WITH M. & B. 693

WITH AND WITHOUT SPECIFIC SERUM

BY

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JUST over a year ago, when favourable results of the treatment of pneumonia with M. & B. 693 had been published, it was decided to conduct a fully controlled investigation of cases of lobar pneumonia admitted to Crumpsall Hospital, Manchester, making full use of X-ray and laboratory facilities. All pneumonia cases have been included in the scheme irrespective of the condition on admission or the stage of the disease. A strict rota of the cases was kept, and these were selected as follows. The first case was treated as a control, and every subsequent third case was also treated as a control. Of the remaining cases every alternate type-I case was treated with M. & B. 693 alone and every other type-I case (other than controls) with the drug plus specific serum. Similarly, apart from controls, every alternate type-II case was treated with M. & B. 693 alone and every other type-II case with the drug plus specific serum. All other types, except controls, were treated with M. & B. 693 alone. The patients were nursed in special wards, and all received the same nursing attention and the ordinary pneumonia routine : Antiphlogistine, expectorant mixtures, sedatives, and stimulants.

INVESTIGATION

The following laboratory investigations were undertaken on admission and before treatment was begun :

(1) *Blood-cultures* were taken immediately on admission to hospital, before any treatment was given, and thereafter daily as long as the pyrexia persisted. During laboratory hours blood-cultures were taken into Liquoid broth, saponin-citrate broth, and Wright's broth. Outside laboratory hours 5 c.cm. of blood was introduced into 50 c.cm. of Wright's broth and immediately incubated.

(2) *Typing of pneumococci* from sputum, with the direct slide Neufeld reaction with Lederle's sera. Sputa which did not give an immediate typing were cultured on blood-agar and in Wright's broth, but mouse inoculation was not used.

(3) *Wassermann reaction.*

(4) *Leucocyte counts* on admission and thereafter daily as far as possible while the temperature persisted.

(5) *Quantitative estimation of serum bilirubin* was done in view of the recognised unfavourable association of jaundice and pneumonia, but later it was discontinued, having been estimated in 66 per cent. of the cases.

TREATMENT

The dosage of M. & B. 693 was that recommended by Evans and Gaisford (1938)—namely, 2 g. immediately by mouth, followed by 1 g. four-hourly. This was continued for twenty-four hours after the temperature had fallen to normal and was restarted

if the temperature subsequently rose. If a patient was admitted during the night, the typing of the sputum was postponed until the next morning. Thus, some patients requiring serum plus M. & B. 693 had to wait for some hours before receiving the specific serum, although the drug had been given on admission. The dosage of serum was as follows: patients under forty years old admitted within ninety-six hours of the onset received 50,000 units intravenously, and all other patients 100,000 units. No additional doses of serum were given. No sensitivity tests were performed. The serum was warmed and given slowly. Adrenaline was given whenever necessary to counteract untoward symptoms, such as rigor and dyspnœa. The chest was radiographed as soon as was convenient.

COMPARISON OF CASES TREATED WITH M. & B. 693 AND CONTROLS

In pneumonia the case-mortality is unfavourably influenced by increasing age. On comparing the ages of the patients treated with M. & B. 693 with those of the controls it was a little disappointing to find that, in the males, age favoured the patients treated with M. & B. 693, for 59 per cent. were under forty, whereas only 47 per cent. of the controls were under that age. In the females the age-distribution of the controls was similar to that of those treated with M. & B. 693, and the results are therefore more strictly comparable. In the males we had 55 controls with 15 deaths and 84 cases treated with M. & B. 693 with 8 deaths. Age is not the real determining factor in this low case-mortality, for there were 12 deaths in the 29 controls aged forty or over, whereas in the patients treated with M. & B. 693 there were 36 aged forty or over with only 6 deaths. It is clear that not only has the case-mortality of the whole group treated with M. & B. 693 been reduced, but also the reduction is maintained in the patients aged forty or over. In the females there were 23 controls with 6 deaths, whereas there were 35 cases treated with M. & B. 693 with no deaths. This is far more striking than in the males, and it is to be remembered that the ages are comparable. On combining the figures for males and for females (table I) one finds that there were 78 controls with 21 deaths. On looking up a series of 870 cases of lobar pneumonia treated in this hospital in 1935–37, before the introduction of M. & B. 693, we found that the case-mortality among 624 males was 33·8 per cent. and among 246 females 21 per cent., that for the 870 cases being 30 per cent. Our figures were 119 cases treated with M. & B. 693 with 8 deaths, a case-mortality of 6·7 per cent. This compares closely with the rates given in other papers.

It is interesting to compare the case-mortality in the patients aged fifty-five or over. There were 21 controls with 9 deaths and 24 cases treated with M. & B. 693 with 4 deaths, which is a higher case-mortality than for those under fifty-five; but it is an improvement. It is well known that type-III pneumonias tend to affect elderly persons, and this age factor, together with the nature of the infecting organism, leads to a high case-mortality, given by various authors as 50–60 per cent. In our control series there were 14 type-III cases with 6 deaths, whereas among the patients treated with M. & B. 693 there were 13 cases with 2 deaths. We were particularly impressed by the favourable prognosis with treatment with M. & B. 693 in type-I pneumonias, of which there were 34 cases with no deaths.

All writers on this subject have been struck by the rapid movement which follows treatment with M. & B. 693. We, the visiting medical staff, saw these patients generally on the day after their admission, when they had already been treated with M. & B. 693 for about twelve to twenty-four hours, and we were so struck by the difference in appearance between the treated and the control cases that at first we thought that chance was favouring the treated. We realised later that we were already observing the results of the treatment. In most of the cases treated with M. & B. 693 the temperature fell rapidly to normal in twenty-four to thirty-six hours, and it was unusual to find any patient without a decided fall in temperature twenty-four hours after treatment had been started. On some occasions a secondary rise followed cessation of treatment with the drug, but a second course usually brought the temperature back to normal, except where a complication was developing.

We agree with other writers, notably Evans and Gaisford (1938) and Anderson et al. (1939), that resolution of the lung was not in any degree hastened by this treatment; in fact, we feel that in some cases it may have been delayed. Anderson et al. (1939) also commented on the fact that their patients were not so bright after treatment with M. & B. 693 as with a natural crisis, and this has been our experience with some patients, although many others were, we thought, as well after their "forced crisis" as after a natural crisis. A general improvement always accompanies the fall in temperature and pulse-rate. Rusty sputum often continued for a couple of days after the temperature had fallen to normal.

TOXIC EFFECTS AND COMPLICATIONS

The commonly recognised disadvantages of treatment with M. & B. 693 are nausea, vomiting, cyanosis, and rarely agranulocytosis. In this series nausea was rather more common among the females than among the males. Vomiting caused the treatment to be stopped in 3 cases, but all other patients with nausea were coaxed by the ward sister to continue this treatment. In no case was cyanosis sufficiently pronounced to lead to cessation of treatment, although 1 case of moderate sulphæmoglobinæmia and 1 of methæmoglobinæmia were observed. Both rapidly improved when the drug was temporarily suspended. Barnett et al. (1939) observed methæmoglobinæmia in most of their intensely treated cases; so we appear to have been fortunate. Although agranulocytosis has been recorded often with the use of M. & B. 693, in our cases there did not appear to be any significant change in the behaviour of the leucocytes as between the cases treated with M. & B. 693 and the controls. There was no suggestion of agranulocytosis.

TABLE I—COMPARISON OF RESULTS IN PNEUMONIA TREATED WITH M. & B. 693 AND IN CONTROLS

Pneumococcus type	Age	Males and females			
		Controls		Treated with M. & B. 693	
		Cases	Deaths	Cases	Deaths
I	Under 40	12	2	25	—
	Over 40	15	5	9	—
II	Under 40	8	2	10	1
	Over 40	5	2	5	—
III	Under 40	5	1	1	—
	Over 40	9	5	12	2
Other types	Under 40	14	1	34	1
	Over 40	10	3	23	4
Total	All ages	78	21	119	8

A short period of delirium seemed a little more common in the patients treated with M. & B. 693 than in the controls. We were probably fortunate also in that in only 1 case was a rash noticed, but Thompson (1939) mentions that the rash starts about the eighth to twelfth day of treatment, and it is possible that we may have missed a few slight rashes. In the 78 controls there were 4 empyemata, 4 sterile effusions, and 1 case of infective endocarditis and meningitis. In the 119 cases treated with M. & B. 693 there were 2 empyemata, 1 sterile effusion, 1 abscess of lung, and 1 case of gangrenous lung. Gaisford (1939) noted an increase in the number of sterile effusions and thought that such patients would have developed empyemata had they not received M. & B. 693.

RESULTS WITH M. & B. 693 ALONE AND COMBINED WITH SERUM IN INFECTIONS OF TYPES I AND II

Experimental evidence (Fleming 1938) suggests that the action of M. & B. 693 in pneumonia would be enhanced if the immunity of the patient to the infecting pneumococcus were increased simultaneously. We felt that it was necessary to investigate the combined action of the drug and of type-specific serum. We treated with M. & B. 693 plus serum 37 patients with pneumonia of either type I or type II. Of 25 with type I 2 died, compared with 7 deaths out of 27 controls and no deaths out of 34 cases treated with M. & B. 693 alone. Of 12 with type II treated with drug and serum 1 died, compared with 4 deaths out of 13 controls and 1 death out of 15 cases treated with the drug alone. The combined case-mortality for types I and II was as follows : controls, 11 deaths in 40 cases ; drug alone, 1 death in 49 cases ; and drug plus serum, 3 deaths in 37 cases (table II). The ages of the patients treated with drug plus serum correspond closely with those of our controls. The combination of drug and type-specific serum gives the same immediate improvement as the drug alone. It has, however, the disadvantage of serum reactions, which developed in a quarter of the cases, usually taking the form of a rigor. The reaction generally develops within an hour of receiving serum.

TABLE II—COMPARISON OF RESULTS IN TYPE-I AND TYPE-II PNEUMONIAS TREATED WITH M. & B. 693 ALONE AND WITH THE DRUG PLUS SERUM AND IN CONTROLS

Pneumococcus type	Age	Males and females					
		Controls		Treated with—			
				M. & B. 693		M. & B. 693 plus serum	
		Cases	Deaths	Cases	Deaths	Cases	Deaths
I	Under 40	12	2	25	—	11	1
	Over 40	15	5	9	—	14	1
II	Under 40	8	2	10	1	5	—
	Over 40	5	2	5	—	7	1
Total	All ages	40	11	49	1	37	3

Of 49 patients with either type-I or type-II pneumonia treated with M. & B. 693 alone, in 14, after a fall to normal, there was a secondary rise of temperature to over 100° F., which was apparently due to the following complications : recurrence in another lobe (2) ; delayed resolution (3) ; lung abscess (1) ; gangrene of lung (1) ; tonsillitis during convalescence (1) ; and drug fever (1). In 5 there was no obvious cause. A similar secondary pyrexia developed in 6 of the 37 cases treated with M. & B. 693 plus serum, and in all of these the secondary rise of temperature began while the patients were still receiving the drug. In 4 of the 6 cases the pyrexia was due to obvious causes : empyema (2), abscess of lung (1), and spread of infection to another lobe (1).

TABLE III—DEATHS IN PNEUMONIA WITH POSITIVE BLOOD-CULTURE

Pneumococcus type	Controls		Treated with—			
			M. & B. 693		M. & B. 693 plus serum	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
I	7	4	7	—	9	—
II	4	2	3	1	1	—
III	3	3	1	1	—	—
Other types	1	—	5	2	—	—
All types	15	9	16	4	10	—

It is generally considered that a positive blood-culture tends to indicate a severe form of the disease ; therefore the blood-culture results (table III) deserve special notice. In the series as a whole there were 15 positive blood-cultures in the controls, with 9 deaths, whereas with M. & B. 693 there were 16 positive blood-cultures with 4 deaths. In the type-I and type-II pneumonias treated with the drug alone there was 1 death in 10 cases with a positive blood-culture, and no deaths in 10 cases with a positive blood-culture treated with the drug plus serum.

It is recognised that great caution is needed in drawing conclusions from these small figures, but the lowered case-mortality in the "treated" cases with positive blood-cultures is worthy of note. It was found in this series, as elsewhere, that repeated positive blood-cultures indicated a bad prognosis. In all our cases treated with M. & B. 693 alone or with the drug plus serum the blood-culture became negative in twenty-four hours except in patients who died or developed a complication.

LABORATORY AND POST-MORTEM FINDINGS

Typing of pneumococci.—The pneumococcus was isolated and typed from the sputum or the blood in 200 out of 234 cases (86 per cent.). In 1 case a pneumococcus was isolated but could not be typed with any of the thirty-one sera available. The failure to isolate the pneumococcus in 14 per cent. of the series, chiefly in the females, was due to the fact that in almost all of these the sputa were poor and watery. Two sputa yielded an almost pure culture of *Hæmophilus influenzæ*, and these cases were considered to be influenzal pneumonias and excluded from the series. The percentage of successful typings compares favourably with those obtained in other published series. The distribution of types (table IV) does not call for special comment. Two cases, both controls, are of interest from an immunological point of view. In one of them type VII was isolated from the sputum, and fourteen days later, when another lobe was affected, type I was found. In the other case the sputum yielded a type V on first examination, and twelve days later, when the disease had spread to the other lung, a type IX was present.

Blood-cultures.—Wright's broth, a predigested veal broth, has been found to be a successful medium for the growth of pneumococci. Growth when present always appeared within eighteen hours and was usually luxuriant.

Post-mortem findings.—Necropsies were performed in 20 cases. In each the diagnosis of lobar pneumonia

was confirmed; in 2 cases there was purulent pericarditis, in 1 there were endocarditis and meningitis, and in 2 there were small hæmorrhages into the suprarenal cortex.

TABLE IV—INCIDENCE OF THE PNEUMOCOCCUS TYPES FOUND

Type of pneumococcus	Males under and over 40		Females under and over 40		Total	Type of pneumococcus	Males under and over 40		Females under and over 40		Total
	Under	Over	Under	Over			Under	Over	Under	Over	
I	38	31	10	7	86	XV	1	1	—	—	2
II	17	13	6	4	40	XVI	—	—	—	1	1
III	3	12	3	9	27	XVII	—	—	1	—	1
IV	2	—	—	1	3	XVIII	—	2	3	—	5
V	2	3	2	1	8	XIX	—	1	—	—	1
VII	1	2	2	—	5	XX	1	—	—	—	1
VIII	3	4	2	1	10	XXIII	1	—	1	—	2
IX	1	—	1	—	2	XXV	1	—	—	—	1
X	—	2	—	—	2	XXVII	—	1	—	—	1
XIII	—	1	—	—	1	No types	14	7	9	4	34
XIV	—	1	—	—	1	Total	85	81	40	28	234

SUMMARY

We have described a series of 234 cases of lobar pneumonia, of which 78 were controls with 21 deaths; 119 were treated with M. & B. 693 alone, giving a case-mortality of 6·7 per cent.; and 37 cases of either type I or type II treated with M. & B. 693 plus specific serum, with 3 deaths.

The case-mortality in patients aged fifty-five or over was more than halved by treatment with M. & B. 693, and a similar reduction was noted in the smaller number of type-III cases. We were impressed by the favourable outlook in type-I and type-II pneumonias treated with M. & B. 693 alone, 1 death taking place in 49 cases. The case-mortality in type-I and type-II infections was slightly better in the cases treated with M. & B. 693 alone than in those treated with the drug plus serum, but in view of the comparatively small numbers it is inadvisable to draw conclusions from this.

Of 15 control patients with positive blood-cultures (any type of pneumococcus) 9 died, whereas of 16 patients who had positive blood-cultures and were treated with M. & B. 693 only 4 died. A striking feature was the considerably reduced case-mortality in type-I and type-II infections with positive blood-cultures, as compared with similar control cases, in patients treated with "693" alone and with "693" plus serum (see table III).

Complications were fewer in the cases treated with M. & B. 693 and in those given the drug plus serum than in the controls.

We wish to thank Dr. R. Veitch Clark, medical officer of health for the city of Manchester, for permission to carry out the investigation and for the facilities which he placed at our disposal.

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THE HYPERVENTILATION SYNDROME

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In those illnesses in which psychological and somatic factors are interrelated each may aggravate the other until cause and effect become obscure. A condition of this type became very prevalent in the services during the last war and is likely to increase again in this. At that time many persons under varying war stresses complained of palpitation and breathlessness which were not related to any demonstrable organic lesion of the heart. This condition was often complicated by obvious psychological abnormalities or by disabling symptoms, such as fainting, dizziness and headaches. At the time the syndrome was known as "disordered action of the heart" (D.A.H.), but this term so obviously reflected only one aspect that it later fell into disrepute. Similar cases seen in peace-time have been reclassified in different terms. When anxiety precipitates the condition, or when during the attack the patient shows obvious psychological abnormalities, the case is regarded as one of "anxiety neurosis" or of "hysteria." If, on the other hand, a severe autonomic disturbance dominates the picture, the diagnoses of "neurocirculatory asthenia" and of "effort syndrome," whenever exertion aggravates the condition, have been used.

Unfortunately perhaps, differing labels have now been attached to cases which, having many features in common, should have been kept together. There are, for instance, the constantly recurring complaints by many of these patients of such symptoms as headache, dizziness, fainting attacks, and feelings of general bodily weakness which are said to follow the attacks of palpitation. Hitherto, for lack of an adequate explanation of their occurrence, except in terms of a psychological ætiology, and because of the frequent presence of hysterical behaviour during the attack, they have been dismissed as "functional." But there is now reason to believe that disorders of breathing may sometimes play a part in their production. Many patients complain of a sense of constriction in the chest or of difficulty in getting their breath when the palpitation comes on. To relieve these feelings they sigh excessively or breathe rapidly. As a result they consciously or unconsciously hyperventilate; in the severer cases this produces a definite gaseous alkalosis.

Various workers have recently emphasised that hyperventilation produces, apart from tetany, a wide variety of symptoms which are identical with those complained of by these patients. Early symptoms, such as frontal or occipital headache, dizziness, fainting attacks, and light feeling in the head, are common. A far-away feeling without loss of consciousness, general weakness, or extreme fatigue also occurs. Tetany is a well-known complication of hyperventilation, but the release of hysterical behaviour in an hysterical subject and the production of mental confusion as sequelæ to over-breathing are less generally recognised (Sargant and Fraser 1938a). Although there may be other causes for these symptoms, in those cases in which spontaneous hyperventilation is responsible they can be generally reproduced by voluntary hyperventilation and

relieved by the breathing of carbon dioxide or the rebreathing of expired air. During the past year, in conjunction with J. E. Finesinger, I made a laboratory investigation of these earlier symptoms which develop with hyperventilation in normal and neurotic subjects before the onset of tetany. A detailed account of this will shortly be published. The symptoms were so variable and sometimes so bizarre that it would have been hard to deny their "functional" origin but for their disappearance when, unknown to the patient, different percentages of carbon dioxide were added to the air or oxygen over-breathed.

The following case, referred to Sutton Emergency Hospital neurological unit, now staffed from the Maudsley Hospital, illustrates many of these points. It presents features of hyperventilation complicating a condition in which the diagnosis of anxiety state, anxiety hysteria, neurocirculatory asthenia, or even effort syndrome would have been permissible if certain aspects of the total picture had been emphasised at the expense of others. The crisis in the illness was precipitated by anxiety attributable to the war.

CASE-RECORD

A man, aged 22, was admitted to a general hospital on Sept. 30, 1939, having been sent up by his doctor with a diagnosis of valvular disease of the heart. He had been a shy nervous boy whose early neurotic traits had included stammering and bed-wetting. Since leaving school at 16 he had done only odd jobs, holding each a short time before giving it up or being dismissed. He complained that few jobs seemed to suit him, and he had "always suffered with his nerves." He said that he had been almost continuously unemployed for the past two years because of "heart trouble." There was an indefinite history of rheumatic fever at 13 and recurrence of articular pains lasting a week two years ago, for which he was admitted to hospital and then sent to a convalescent home. Shortly afterwards he began to worry about attacks of palpitation, which became noticeable on excitement or after a little exertion. His doctor told him that he had valvular disease of the heart, and the patient drew panel insurance for six months, finally signing himself off because he obtained more money on the labour exchange. For the past two years he has been unduly pre-occupied with the palpitation and its possible effects on his health.

In July, 1939, he started to have, besides the palpitation, attacks of shortness of breath and dizziness. These would come on with exertion, excitement, and sometimes when he was lying down. On the morning war was declared he listened to the Prime Minister's speech and almost immediately afterwards heard the air-raid warning. This instantly brought on severe palpitation, and he felt "breathless, as though I had been running a mile." All day he was worried with thoughts of personal injury, particularly fear of being gassed. He was also due to be called up for military service in the next age-group. He went out in the evening for a walk and collapsed in the street. The attack started with palpitation and breathlessness, followed by dizziness and faintness, a light feeling in the head, and general weakness. In the attack he could not help "falling like a piece of lead" but did not lose consciousness, was able to keep his eyes open, and could remember people helping him up and taking him to an ambulance station, from where he was driven home.

These attacks have continued since, in a milder form, precipitated either by excitement or made worse by effort when excited. In many of them he was afraid that he might die of heart-failure.

Examination revealed a localised systolic murmur at the apex of the heart; there was no cardiac enlargement or other evidence of organic cardiac abnormality to explain the symptoms. When he was at rest, his pulse-rate was slow and his pulse regular, but he showed emotional vasolability, with sweating hands. All other systems were normal, but he was constitutionally thin and of poor physique. He gave the following detailed account of his attacks. The onset of palpitation, sweating, and a tight feeling in the chest is followed by shortness of breath, which makes him gasp or sigh excessively. He then becomes dizzy, has a light feeling in his head and a pounding in his ears, feels that he is going to faint, and experiences general bodily weakness and feelings of collapse. He may then fall to the ground but does not lose consciousness.

During the examination a short period of voluntary hyperventilation reproduced the head and body sensations, though he did not complain of the palpitation or tightness in the chest. Given an explanation of the ætiology, he now finds these symptoms are much relieved if he controls his breathing at the onset of attacks of palpitation.

COMMENTS

The literature on this subject confirms that disorders of breathing are often found in anxious subjects. Kerr and his colleagues (1937) described similar symptoms resulting from over-breathing in association with anxiety states. Sargant and Fraser (1938a and b) also found them in cases presenting other features of hysteria. Soley and Shock (1938) have investigated from this aspect patients labelled as effort syndrome. Besides remarking how often these patients were found to be hyperventilating even under basal conditions, they published a detailed account of the biochemical investigation of a typical case. They showed that the gaseous alkalosis produced by hyperventilation coincided with many of the symptoms, and that these symptoms were relieved by the rebreathing of carbon dioxide. They also emphasised that the hyperventilation symptoms in effort syndrome were similar to those already described in other conditions, including those labelled "D.A.H." in the last war.

Thus there seems to be a considerable body of evidence to suggest that the part played by over-breathing in the symptomatology of these cases as they occur in this war would repay further investigation. Once it has been realised that over-breathing releases constitutional weakness and preformed behaviour patterns in an individual's nervous system, the variation in symptoms becomes much more understandable. It is the relative predominance or mixture of symptoms of autonomic overactivity, such as the palpitation and breathlessness, and the psychoneurotic symptoms resulting from hyperventilation that provide a part of the different symptoms seen.

TREATMENT

Both psychological and biochemical means can be used to break up attacks complicated by symptoms of hyperventilation. Sometimes psychotherapy and reassurance are sufficient; for, if discussion of the patient's problems relieves his immediate anxieties, both the autonomic disturbance and the consequent stimulus to hyperventilation will be diminished. Explanation and personal demonstration to the patient of the mechanism of his attacks may also lessen the anxiety about their nature and consequently bring about improvement. Sedatives often reduce the number and severity of

attacks, whereas emotional exhaustion and physical fatigue increase their frequency.

Symptomatic relief of many of the manifestations of an acute attack can be obtained rapidly by breathing carbon-dioxide mixtures or by rebreathing into a mask or paper bag. The patient can also be instructed to hold his breath or to regulate his breathing carefully when he experiences the onset of palpitation or anxiety. If this can be done, the dizziness and faintness may be relieved until the attack has passed off. This is often impossible, for shortness of breath or a feeling of suffocation compels the patient to seek relief in sighing, gasping, or rapid or deep breathing. The patient may be helped in mild cases by the administration of large doses of ammonium chloride, gr. 80–120, to combat the alkalosis, but this is rarely effective in the severer attacks. Experience has shown that tolerance to this drug may rapidly be acquired, whereupon it gradually loses its effect.

Often these therapies or combinations of therapies are unsatisfactory. Especially in time of war, psychological stress and fatigue are not easily abolished, and we have as yet no adequate means of controlling those symptoms of anxiety, such as the breathlessness and palpitation, which are probably the direct result of autonomic overactivity. Research is required to investigate improved chemical methods of controlling this sympathetic overactivity and regulating acid-base disturbances to minimise the effects of unavoidable anxiety on the metabolism as a whole.

SUMMARY

(1) In certain subjects anxiety causes respiratory disturbances which may result in hyperventilation.

(2) Hyperventilation may precipitate a variety of "functional" symptoms, such as dizziness, fainting attacks, various head sensations, general bodily weakness or collapse, and hysterical outbursts, besides hyperventilation tetany.

(3) The type of case that was often labelled "D.A.H." in the last war often exhibits such symptoms, which come on with attacks of palpitation and breathlessness. It is suggested that hyperventilation may sometimes be a contributing factor to the production of these symptoms.

(4) A case is described in which symptoms of hyperventilation complicated attacks of palpitation and breathlessness brought on by emotion and mild exertion. The condition was aggravated by stress due to the present war.

(5) Treatment may be along either psychological or biochemical lines. Either psychotherapy or sedation should be used to relieve the anxiety producing the attack, or various measures should be tried to combat either the hyperventilation or the gaseous alkalosis resulting from it.

I wish to thank Dr. Louis Minski, medical superintendent, and Dr. Eliot Slater, clinical director of the neurological unit, for their advice and permission to publish this case. The opportunity of seeing the work of other investigators in this field was made possible by the tenure of a Rockefeller fellowship in the U.S.A. and by the privilege of working in the department of psychiatry at the Massachusetts General Hospital under Dr. Stanley Cobb.

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HÆMATEMESIS AND THE WAR

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The relationship of peptic ulcer to physical and mental strain has often been pointed out, and it is not surprising that the incidence of the complications of ulcer have been effected by the strains of war. After the outbreak of war a considerable increase was noted in the number of cases of hæmatemesis admitted to the Lewisham Hospital, 38 cases being admitted in the four months between the outbreak of war and the end of the year, compared with 36 cases in the previous eight months (see accompanying table). The increase was particularly noteworthy in September. Inquiry revealed that none of the other general hospitals in the area were refusing to admit cases of this type, and the social status of the patients in group 2 was in no way different from that in group 1; hence no patient was admitted who before the war might have been treated outside this hospital.

Each case was investigated, and ætiological factors, particularly in relation to the war, were noted. Most of the patients had a peptic ulcer. The diagnosis was sometimes made on clinical grounds only, for radiography, carried out after a course of treatment revealed no abnormalities in the stomach and duodenum. In 28 of the cases mental and physical strain associated with the war existed. The findings may be summarised as follows:—

	Cases
Worry about the war—e.g., possibility of raids, war service, evacuation of relations, apprehension about the future	16
Unemployment or financial worries due to war	6
Heavier work and longer hours due to war	13
Worry by factors not directly related to war—e.g., domestic trouble, bereavement, illhealth	9
No worries or heavy work (including 1 case of splenic anæmia)	3
Trauma	1
Effect of war not noted	3

In many of the cases several of these factors coexisted. Some of the patients mentioned that they were heavy smokers, and a few admitted to smoking more since the war. In most cases there was no excessive intake or increased consumption of alcohol since the onset of the war. Dental sepsis was not in greater evidence in group 2 than in group 1 (see table), rather less than half the patients showing signs of it. Some had already had dental treatment, including several of those who had previously had hæmatemesis, long-standing dyspepsia, or operations for peptic ulcer.

CASES OF HÆMATEMESIS ADMITTED TO LEWISHAM HOSPITAL DURING 1939

Group 1 (before the war)				Group 2 (after the outbreak of war)	
January	2	May	11	September	15
February	5	June	3	October	7
March	6	July	1	November	8
April	5	August	3	December	8
Total	36			Total	38

Group 1.—24 males, 12 females: 33 cases of peptic ulcer, 1 case of cirrhosis of liver, 1 case of splenic anæmia, and 1 case of carcinoma of stomach.

Group 2.—31 males, 7 females: 34 cases of peptic ulcer, 2 cases of cirrhosis of liver, 1 case of splenic anæmia, 1 case of carcinoma of stomach. In 5 cases there was melæna without hæmatemesis.

As regards the cases of peptic ulcer in group 2, in 26 patients there had been a history of dyspepsia for

more than six months. In 21 of these the condition had relapsed or became aggravated after the outbreak of war. In 6 other cases the dyspepsia was recent, there having never been symptoms of indigestion before the war. In 10 cases there had previously been hæmatemesis or melæna. Of the patients admitted after the war 6 had been inpatients earlier in the year, 3 of them with hæmatemesis and 1 with an acute perforation of a gastric ulcer. Altogether 6 of the patients in group 2 had previously had gastric operations. All the patients in group 2 recovered except 1, who died of carcinoma of the stomach. In 1 case an operation was performed for intractable bleeding, a gastric ulcer was found and sutured, and the patient recovered completely.

Uncomplicated cases of peptic ulcer in the early weeks of the war were probably being treated at home and were not being admitted to hospital to the same extent as under normal conditions; hence no comparison of ulcer cases in general could be attempted. It may be noted, however, that in the eight months preceding the war 15 patients with perforated peptic ulcer were admitted to the Lewisham Hospital, whereas in the following four months there were 14 cases. These numbers are small, but they show a similar tendency to an increase during the war. No analysis of ætiological factors in the perforation cases was made, because they did not come under my care.

SUMMARY

The outbreak of war was followed by an increase in the incidence of hæmatemesis and perforated peptic ulcer. In most of the cases of hæmatemesis inquiry revealed abnormal mental or physical strain associated with the war.

I wish to thank Dr. W. Allen Daley, medical officer of health to the London County Council, and Dr. Humphrey Nockolds, medical superintendent of Lewisham Hospital, for permission to publish this article.

REVIEWS OF BOOKS

Modern Psychotherapy

By NOEL HARRIS, M.D. Lond., physician-in-charge, Woodside Hospital; physician for psychological medicine, Middlesex Hospital, and lecturer in psychological medicine at the medical school. London: John Bale Medical Publications. 1939. Pp. 144. 7s. 6d.

Psycho-analysis

By EDWARD GLOVER, M.D. Glasg., director, London Clinic of Psycho-analysis; director of research, the Institute of Psycho-analysis. Same publishers. 1939. Pp. 139. 12s. 6d.

BOTH of these monographs are addressed to the general practitioner and are intended to acquaint him with the ideas of and indications for psychotherapy. Dr. Harris, keeping strictly to this programme, gives him an easily readable, eclectic survey of practical psychotherapy. He rarely goes, however, beyond what can be regarded as general knowledge among readers of psychological novels. Some typical examples shortly described would have helped the practitioner to decide whether a psychotherapist should be called in, and would have enlivened the book. Dr. Glover goes to the other extreme. In the first section of his book he proposes to outline normal mental development from the Freudian point of view "in non-technical terms." He has supplied a highly condensed abstract of Freud's doctrine of child psychology as it stands today, but it is full of psycho-analytical terms only partially defined. It makes stimulating reading for the expert and will be a useful compendium for the future analyst. The same can be said of the second section, which contains Freudian psychiatry in a nutshell, dealing with psycho-analytical interpretation of the principal mental disorders. Only the third section, on practical applications, gives the guidance which the practitioner who is not a specialist in psychological medicine needs when he is asked the important question, whether Freudian analysis should be applied in one of his cases. Here especially the wide personal experience of the author is evident.

Textbook of Nervous Diseases

(Translated from the 5th German ed.) By ROBERT BING, professor of neurology, Basle, Switzerland. London: Henry Kimpton. 1939. Pp. 838. 50s.

THOSE interested in neurology who do not read German will be glad to have access to this clinical textbook which covers the whole field of neurology and includes all the important recent work. The arrangement of a textbook of neurology is always difficult, since a plan based on disorder of function must inevitably conflict with one derived from nosology. Professor Bing's arrangement is unsatisfactory because neither plan is consistently followed. Thus, it is difficult to justify the inclusion under the single heading of the Dyskinesias of tremor, tetany, chorea and myasthenia gravis, and surely the time has come when exophthalmic goitre, myxœdema and Addison's disease might be omitted from neurological textbooks. The book is likely to be more valuable as a work of reference than as an introduction to the subject for students.

Les hermaphrodites et la chirurgie

By L. OMBRÉDANNE, professor of clinical surgery for children at the Faculty of Medicine, Paris; surgeon to the l'Hôpital des Enfants-Malades. Paris: Masson et Cie. 1939. Pp. 322. Frs.85.

THIS book deals more with the indications for operation than with operative details. Professor Ombrédanne discusses the ideas current among the races of antiquity, who considered the hermaphrodite rather as an ideal fusion of the male and female nature and body than as an individual with an abnormal condition of the genital organs. It is significant that the antique statues of the hermaphrodite, for example, the famous one in the Louvre, represent a gracefully shaped youngster with the penis and scrotum of a boy and the breasts of a girl, whereas the hermaphrodite as actually met with is not as a rule beautiful but frankly ugly.

It would be difficult to imagine any condition of the reproductive organs which cannot be found recorded in medical literature, with one important exception—a person who could act in the capacity of both father and mother to his offspring. There are many instances in medical and romantic literature of people who could play both the male and female part in sexual intercourse, and of cases in which both ovary and testis have been found, either separately or as an ovo-testis. Professor Ombrédanne insists that in these there is no single crucial test of sex, apart from the production of living spermatozoa or pregnancy. People who may be fairly classified as hermaphrodites are almost always sterile, although the gonad present may produce its internal secretion.

The sex which should be assigned to a hermaphrodite

depends on the anatomy and histological structure of the internal genitalia; the structure of the pudenda; the secondary sex characteristics, hair, breasts, skeleton and so on; and the psychological aspect of the case, including the wishes and social environment of the patient or of the parents. The author considers that in some cases a laparotomy may be justifiable to ascertain whether a uterus or testis is present, and if so whether the channels which conduct their secretions to the exterior are functional. He advises a microscopical examination of doubtful structures, but he adds the warning that this may entail a risk to the vitality of the structure examined.

The book ends with some "leading cases" in which operations have been performed, and it will be a valuable guide to the surgeon in deciding what his treatment should be.

Prevention of Venereal Disease

(3rd ed.) By MARIE C. STOPES, D.Sc. Lond., Ph.D. Manc., Fellow of University College, London. London: Putnam and Co. 1939. Pp. 62. 2*s*. 6*d*.

WITH Dr. Stopes's facts and figures there can be no quarrel, but her style in presenting them, though it undoubtedly commands the attention of the public she wants to reach, is often irritating to the professional mind. She vividly describes the ætiology of syphilis and gonorrhœa and their dire results on the victim, his or her spouse and offspring. But to ascribe "the greater part of the devastating stupidity" and lack of intellectual elasticity of the old to the end-results of venereal infection is perhaps unduly severe on the old and is surely to steal the thunder of such morally blameless degenerations as atheroma. She pleads eloquently for preventive measures, first by the avoidance of all illicit sexual contact, and if, as she sadly agrees, this is a counsel of perfection, then by the exercise of meticulous cleanliness and disinfection by the exposed parties. Dr. Stopes may labour or indeed belabour her points; her style may be lurid and sentimental; nevertheless, this book is "good propaganda" and is of value in the ever present struggle against the venereal diseases.

Psychological Aspect of Delinquency

A series of lectures by various authors. Edited by G. DE M. RUDOLF, M.R.C.P., D.P.M., D.P.H. London: Baillière, Tindall and Cox. 1939. Pp. 64. 2*s*. 6*d*.

THE series of lectures of which this book is the record were delivered under the auspices of the Bath and Bristol Mental Health Society, and they are simple in form and easy to understand. Their subject has been much in the mind in recent years, ever since it began to be realised that criminality was not simply the outcome of the innate wickedness of the individual but was either the result of a capacity for control below that of the ordinary healthy citizen, or was caused by wrong training possibly in a criminal environment. Many people, apart from those actually engaged in the work, will be glad of expert information that will clarify their ideas on this subject.

Wide Field X-ray Treatment

Published in connexion with the Nuffield Wide Field X-ray Therapy Research. By S. GILBERT SCOTT, M.R.C.S., F.F.R., D.M.R.E., consulting radiologist to the London Hospital; hon. radiologist to the British Red Cross Rheumatism Clinic. London: George Newnes. 1939. Pp. 80. 8*s*. 6*d*.

THIS book describes a method of treatment which uses X rays of medium wave-length generated at 100–130 kV to deliver comparatively small doses to the whole trunk. It is claimed that the patient's natural means of cure are stimulated because this form of X-ray bath influences the power of resistance. The experimental basis on which the method is founded is taken from papers relating to work twenty years old. The effects of treatment are assessed by a serological sedimentation technique based on the Bendien test. This is illustrated by graphs, but the explanation given is not sufficient to allow the reader to understand the exact nature of the response. In his final chapter the author says: "The basic principle of the method is that the application of small doses of X rays to the whole trunk produces some unknown 'state' in the patient." There is also a speculation that this state may be a means of preventing cancer.

Diseases of the Chest and the Principles of Physical Diagnosis

(6th ed.) By GEORGE W. NORRIS, M.D., formerly professor of clinical medicine in the University of Pennsylvania; chief of medical service "A," Pennsylvania Hospital; and H. R. M. LANDIS, M.D., Sc.D., formerly professor of clinical medicine in the university. London: W. B. Saunders Co. Pp. 1019. 45*s*.

IN the present mechanical age there is a tendency to forget the arts of clinical medicine, and to short-circuit the careful physical examination of the patient by proceeding from a brief history of the case to a radiogram of the chest or an electrocardiogram. This work, which can be described as a reference book of physical signs, is a powerful corrective to indulgence in the temptation. Since the last edition appeared Dr. Landis has died, and his section has been ably revised by Dr. Leopold. Electrocardiography and the radiography of the heart and great vessels are discussed by Dr. T. M. McMillan. The bulk of the book remains much what it was before, though many new illustrations have been added. It will be found as great a help as ever in the physical examination of the patient.

Medical Entomology

(3rd ed.) By WILLIAM B. HERMS, professor of parasitology in the University of California. London: Macmillan and Co. 1939. Pp. 582. 24*s*.

THIS book is nominally the third edition of Dr. Herms's "Medical and Veterinary Entomology," which last appeared in 1923; it has, in fact, to a large extent been rewritten, and although insects of veterinary importance are still included the book is now devoted chiefly to insects affecting man. In the early chapters the scope of medical entomology, the nature and origin of parasitism, and the different ways in which arthropods are connected with disease, are well set out. The rest of the book is patchy. For example, the section on the louse contains matter of great practical value; but in the section on fleas the differences between cat and dog fleas (a matter of no importance) are described in detail, while corresponding information about the chief plague fleas of the genus xenopsylla is omitted. And whereas five pages are devoted to the relation of stomoxys to poliomyelitis (which is generally regarded as disproved at the present day) the control of the tsetse fly gets only eighteen lines and the highly important *Glossina tachinoides* is scarcely mentioned. The book will, in general, prove more useful for the entomologist in the U.S.A. than his colleague in the tropics of the Old World. Thus the account of Rocky Mountain spotted fever is good, and so is that of tick-borne relapsing fever in California, whereas the corresponding conditions in Asia and Africa are only sketchily described. The same applies to the section on mosquitoes.

THE LANCET

LONDON: SATURDAY, FEBRUARY 17, 1940

THE RICKETTSIAS SIMPLIFIED

THE investigation of many diseases, more especially those transmitted by arthropods, is divisible into two stages, an analytic and a synthetic. In the first stage a number of apparently different disease entities are described in various parts of the world; in the second evidence accumulates that these geographically distinct conditions are caused by identical or closely related organisms. The two stages are well illustrated by the rickettsial infections. Thus Brill's disease, which has long been known among immigrants in New York, is now recognised to be merely an attenuated form of the European exanthematic typhus. In the same way it was at first thought that endemic murine typhus was quite distinct from true epidemic exanthematic typhus. Now the latter is agreed to be a variant of the endemic murine form which is no longer transmitted by the rat flea, *Xenopsylla cheopis*, but by the human body louse, *Pediculus humanus*, to which, since adaptation is by no means complete, it is often fatal. The production of orchitis in guineapigs by the injection of rickettsias from cases of murine typhus and the failure to produce it by the injection of rickettsias from exanthematic typhus cannot be taken as a true criterion of differentiation. CASTANEDA and SILVA,[1] for instance, working in Mexico City, have found that certain strains, which at first are non-orchitic in guineapigs, become so after transfer in these animals. They believe that typhus fever in Mexico—and the same is probably true of other countries—is constantly starting from a murine origin; by the influence of man-to-man adaptation it then undergoes transformation towards the European exanthematic type. Many strains revert to the original murine type, but others retain the newly acquired characteristics.

There is also a close similarity between an infection caused by a rickettsia isolated from ticks in Montana, U.S.A., and the Australian "Q" fever. Q fever was first described in Australia among dairy farmers and workers in abattoirs by DERRICK [2] in 1937 as an acute illness with a febrile period of 7–24 days. Later, BURNET and FREEMAN [3] described a rickettsia in the spleens of mice infected with Q fever. In 1935 a rickettsia was recovered by DAVIS and COX [4] from ticks (*Dermacentor andersoni*) in America. This agent passes Berkefeld filters N and W, which are impermeable to the rickettsias of typhus and Rocky Mountain spotted fever. DYER [5] reported the accidental infection of a laboratory worker with the Montana infection and later showed that guineapigs which had recovered from infection with Q fever were subsequently immune to the rickettsia isolated from Montana ticks: the only point of difference from Q fever appeared to be the failure to infect monkeys. DYER'S conclusions have now been confirmed by BURNET and FREEMAN [6] in Australia, who have found that the rickettsia isolated from ticks in Montana and that obtained from cases of Q fever are both pathogenic for two species of monkeys, *Macacus rhesus* and *Macacus cynomolgus*, as well as for guineapigs and mice. Although the American is of greater virulence than the Australian rickettsia, it is concluded that both types should be included in the same species.

A further important synthetic advance in our knowledge of rickettsial diseases has been made by Dr. LEWTHWAITE and Dr. SAVOOR in the communication completed in this issue. Hitherto the rural form of tropical typhus of Malaya, the so-called scrub typhus, has been regarded as distinct from that of tsutsugamushi disease of Japan, in virtue of the presence of a primary lesion and an attendant bubo in tsutsugamushi and its supposed absence in the rural typhus of Malaya. Clinical evidence, supported by pathological and immunological observations, shows that one and the same Malayan rickettsia may cause in man either a conspicuous, persistent and necrotic ulcer or a fleeting papular lesion, often escaping recognition by its disappearance before the onset of other signs and symptoms. Rural typhus of Malaya is therefore identical with tsutsugamushi and the former term should be discarded. Thus order is slowly emerging from what but a short time ago was the chaos of rickettsial diseases.

THE SCOPE OF GASTROSCOPY

IT is perhaps inevitable that when a new method is introduced into medicine the innovators set its value high. Gastroscopy, which at first seemed an exception, now follows the rule. Twenty years ago instruments were still cumbersome and dangerous, and the pioneer German gastroscopists sought to correlate their findings with those of radiology and chemistry in the hope that endoscopy would ultimately be rendered unnecessary. This hope has not been fulfilled. Test-meal curves depend on the irritability and motility of the stomach and (unless histamine is used) are within limits independent of the anatomical state of the mucosa. Analysis of the proteins and mucins of gastric juice, cell counts, and the like are tedious methods and give incomplete information.

During its early years the chief value of gastroscopy was twofold. So long as the radiologist depended on mutilated partial-gastrectomy

1. Castaneda, M., and Silva, R., *Publ. Hlth Rep., Wash.* 1939, **54**, 1337.
2. Derrick, E. H., *Med. J. Aust.* 1937, **2**, 281.
3. Burnet, F. M., and Freeman, M., *Ibid*, p. 299.
4. Davis, G. E., and Cox, H. R., *Publ. Hlth Rep., Wash.* 1938, **53**, 2259.
5. Dyer, R. E., *Ibid*, 1938, **53**, 2277; 1939, **54**, 1229.
6. Burnet and Freeman, *Med. J. Aust.* 1939, **2**, 887.

specimens for the verification of his minuter diagnoses, the interpretation of mucosal relief films was imaginary and even fantastic. Gastroscopy educated him by showing him his mistakes, giving him the chance to try over and over again, and proving to him what he could and could not do. The second service of gastroscopy was its recognition of so-called hypertrophic gastritis. For the last hundred years [1] the term mamelonation has unfortunately been applied to two different conditions—to the marking out of the mucosa into polyhedral areas which occurs in normal human and animal stomachs under certain conditions, and to the irregular bunching of the mucosa which results from scarring and contractures and which may give the appearance of glandular new formation. Gastroscopy enabled this second condition to be recognised in the clinic and led to a plausible theory of its life history being formulated. Infiltration of the muscularis mucosæ with scar tissue was supposed to "fix" the folds, making them more liable to traumatic irritation along their summits. Hence the frequency in such stomachs of recurrent attacks of inflammation and in occasional extreme cases the gradual scarring of the folds into highly irregular masses and pseudopolyps. As instruments became safer and less uncomfortable their field of usefulness extended KORBSCH [2] and GUTZEIT,[3] who have gastroscoped the majority of their gastro-intestinal patients over the last fifteen years, both stress the superiority of gastroscopy and radiology combined over radiology alone in the diagnosis of chronic ulcer and in the final decision as to whether the scar is soundly healed. Where there is a suspicion of malignancy, numerous observers have attested to the value of gastroscopy in the differential diagnosis of doubtful ulcers and in the interpretation of minor irregularities in the X-ray mucosal relief film.

In France and the Anglo-Saxon world newcomers, working almost exclusively with flexible instruments, have confirmed previous claims and made additional ones. Time will show whether the great variety of types of gastritis described is of importance in the ætiology of dyspepsia or whether, like changes in the tongue, they are merely symptomatic of some more fundamental derangement. RODGERS and TANNER,[4] in an account of their work at the Highgate L.C.C. hospital, group their 58 cases of gastritis under seven headings, one of which is given the ominous title of "precancerous." They follow SCHINDLER [5] in believing that a material improvement in the cure-rate of carcinoma of the stomach would be effected if gastro-enterological clinics were established where the same man was given opportunities for radiography and gastroscopy. They also believe that such clinics would be of value in the routine care of cases of bad indigestion. They advance no new facts to support this suggestion, but any gastro-enterologist accustomed to doing his own radiology and gastroscopy realises the handicap of being dependent on the radiological report of a third party.

1. Hodgkin, T., The Morbid Anatomy of the Mucous Membranes, London. 1840. vol. ii, p. 280.
2. Korbsch, R., Die Gastroskopie, Berlin, 1926.
3. Gutzeit, K., 1929, *Ergebn. inn. Med. Kinderheilk.* 35, 1.
4. Rodgers, H. W., and Tanner, N. C., Report on the Gastroscopy Clinic at Highgate L.C.C. Hospital, London, 1940.
5. Schindler, R., Gastroscopy, Chicago, 1937.

BREATHING MACHINES

THE epidemic of poliomyelitis in 1938, though it did not affect this country as much as some, led the Ministry of Health to ask the Medical Research Council for guidance regarding the supply and relative merits of mechanical respirators for the treatment of cases with respiratory paralysis. The council thereupon appointed the Respirators (Poliomyelitis) Committee under the chairmanship of Prof. L. J. WITTS to study the question and this committee has now published its report.[1] Before the committee met, the situation was altered by Lord NUFFIELD'S offer in November 1938 to provide a Both respirator free to any hospital in the Empire with more than 100 beds, for this gift ensured that no patient need die for want of apparatus.

In 1938 the two forms of breathing machine with which the medical profession was familiar were the Drinker apparatus or "iron lung" and the Bragg-Paul pulsator. The committee soon found, however, that there were in fact a large variety of machines in use. In those of the Drinker type, which are based on the "spirophore" invented by Woillez in 1876, the patient's trunk and limbs are enclosed in an airtight cabinet, and a motor-driven bellows produces a negative pressure in the cabinet rhythmically alternating with atmospheric pressure. The Henderson modification of this apparatus was the first to be made in this country (1933). The Both respirator, designed for the South Australian Government and developed by the medical officers of the L.C.C., is similar but the cabinet is of wood instead of metal. In the cuirass and jacket respirators only the patient's chest is enclosed, but the principle of maintaining rhythmical negative pressure to the chest-wall is identical with that in any of the cabinet types. The Bragg-Paul pulsator exerts positive pressure to the chest by means of a distensible rubber belt. In other types of apparatus the patient is tilted up and down on a bed or stretcher, the weight of the abdominal contents activating the diaphragm. Finally there are a number of devices, such as the McKesson and Oxford inflators, for giving oxygen under positive pressure from a cylinder to a face-piece. The Drinker machine costs about £200, the Both cost about £100 before it was mass-produced, the negative-pressure cuirasses cost £50–75 and the Bragg-Paul pulsator £80. The committee point out that these machines are not intended to take the place of manual artificial respiration in cases of acute asphyxia due to drowning, poisoning and the like, where quickness in application is the main consideration, and that manual methods should never

1. Breathing Machines and their Use in Treatment. London H.M. Stationery Office. 1940. Pp. 90. 2s.

be postponed in an emergency in the mistaken idea that the patient can be better treated in a machine. For short periods and for patients during transport they recommend simple apparatus such as the McKesson insufflator. For longer periods the Drinker types are efficient but are bulky and introduce difficulties in nursing and splinting. On the other hand, the Bragg-Paul pulsator is simple and allows access for nursing but is not suitable for all forms of respiratory paralysis. The results—both immediate and late—obtained in poliomyelitis with the Drinker type of machine are disappointing and the experience in New York suggests that its indiscriminate use is not devoid of danger. There has not yet been sufficient opportunity of judging the value of the Bragg-Paul pulsator or cuirass respirators. More data are therefore required before any one apparatus can be standardised. The ideal machine should be equally suitable for all cases, cheap, easy to store and transport, and should not require special skill in operation or interfere with other treatment.

The committee point out that poliomyelitis and diphtheria are both best treated in special hospitals and they suggest that cases of respiratory failure from narcotic poisoning or electric shock should also be concentrated in a few centres. They estimate that the number of cases likely to benefit from a breathing machine in this country, even at a peak of poliomyelitis, is not likely to exceed 600 in a year, and some 800 machines have now been made available. These have been dispersed widely, roughly according to the distribution of population, but the committee recommend that in view of the relative ease of transport of cases of respiratory failure and the necessity of experienced medical and nursing supervision treatment should be concentrated in the minimum number of hospitals—mainly in regional poliomyelitis units, in the large hospitals (for cases of poisoning) and in infectious diseases hospitals (for diphtheria). Portable apparatus might be provided for home use in exceptional cases.

GEOGRAPHY OF CANCER

IN this country about one in ten of all those who reach the age of 25 are destined to die of cancer. This is the national average; but there are appreciable local variations. And when the different kinds of cancer are considered separately there are still greater local variations in incidence, and the pattern of distribution is different for each kind of cancer. The distribution of cancer deaths in England and Wales in the period 1921–30 has been analysed by Dr. STOCKS [1] of the General Register Office, and Drs. MOUNTIN and DORN [2] of the United States public health service have made a similar study there. STOCKS shows, for example, that throughout a large part of Wales the incidence of cancer of the stomach is over 40 per cent. higher than the average for England and Wales, while the incidence of cancer of the vagina is some 30 per cent. lower than the average. Again, in five large Lancashire boroughs, taken together, the incidence of cancer of the jaw is 50 per cent. higher and the incidence of cancer of the bladder 40 per cent. lower than in the administrative county of London. For any one kind of cancer the maximum regional differences in incidence found in England and Wales are, as in the United States, of the order of 2 or 3 to 1.

The variations seem to be real. STOCKS's figures are not vitiated by irregularities in population density, or in the proportions of the sexes or of age-groups, for these have been largely or wholly eliminated by the method of calculation. The earlier onset of senescence associated with town conditions, which BROWNLEE [3] regarded as sufficiently pronounced to demand consideration, can be ruled out in some at least of the tables presented by STOCKS—for instance, in that in which death-rates in London are compared with those in the large Lancashire cities. Regional variations in diagnostic skill can hardly be the explanation, for there would have to be an improbably wide divergence in the standard of diagnosis between one kind of cancer and another. Causes associated with degree and character of industrialisation do not seem to explain the distribution patterns except perhaps in cancer of the skin. Wide physiographical features, too, seem of little importance, except that a high annual rainfall is apparently associated with a low incidence of cancer of the bladder.

Whether statistical analysis of the available national records can go further remains to be seen. Perhaps a more profound knowledge of local habits, customs and intimate environmental features is needed. Perhaps the statistician will have to seek new data from hospital case-records specially prepared for his purpose, or perhaps the explanation will come eventually from the experimental side of cancer research. But the conclusion reached by both these inquiries was that the unidentified factors determining the local variations in incidence are peculiar to each form of cancer, and this suggests that, whether cancer is a virus disease or not, for clinical purposes different kinds of cancer should be studied separately. This view implies no conflict between the present two schools of thought, for both admit that what the one calls "contributory factors" and the other "primary causes" may in actual practice be fundamental.

1. Stocks, P. Annual Report of British Empire Cancer Campaign for 1936, p. 257; report for 1937, p. 198; report for 1939, p. 308.
2. Mountin, W. and Dorn, F. *J. Amer. med. Ass.* 1939, **113**, 2405.
3. Brownlee, J. The use of death-rates as a measure of hygienic conditions, *Spec. Rep. Ser. med. Res. Coun., Lond.* 1922, p. 58.

The Index and title-page to Vol. II, 1939, which was completed with the issue of Dec. 30, is now ready. A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now.

ANNOTATIONS

HYPERVENTILATION AND THE EFFORT SYNDROME

THE group of signs and symptoms which make up what Sir Thomas Lewis called the effort syndrome is likely to come to the fore again, for it was the emotional and physical strain of war which first led to its recognition in 1914–18. There is still no complete agreement as to its cause, and the heart specialist on the one hand and the psychologist on the other each continue to claim that its treatment is in their particular province. The condition tends to develop in the man of poor physique who has avoided games and the rough and tumble of the playground while at school, and in after life has taken to a sedentary employment. When this type of man is put through a military training any weak spots in his physical make-up become evident, and on active service he is exposed to the most intense emotion of his life. Soley and Shock [1] stated last year that effort syndrome is an anxiety state complicated by the hyperventilation syndrome, and now Dr. William Sargant suggests in this issue that hyperventilation may sometimes be a contributing factor in the production of symptoms of acute anxiety. It seems impossible with our present knowledge to consider hyperventilation as anything but a symptom of effort syndrome. Sargant illustrates his paper with a case which would, without hesitation, be diagnosed in the Army as effort syndrome. It is true that hyperventilation was a prominent feature of the case, but this type was described by Lewis and his collaborators in their report [2] for the Medical Research Committee, and was familiar as D.A.H. to all medical men who treated cases during the last war.

The importance of the changes in the rate and depth of respiration during emotion has lately been brought out by the research of Finesinger of Boston.[3] By means of the Benedict-Roth metabolism apparatus he obtained a series of respiratory curves while the subject was under the influence of pleasant or unpleasant emotion. He thus demonstrated the fact, familiar to most observers, that the frequency and depth of breathing increase during strong emotion, but he also found that when the subject was composed or under the influence of pleasant ideas the graph showed a smooth rhythm with rounded curves, inspiration and expiration merging into one another, while with unpleasant ideas it showed a greater degree of ventilation as well as a more rapid rhythm, inspiration and expiration following one another abruptly. This fits in with clinical experience, and Finesinger's experiment is chiefly of interest because of the ease with which his subjects were able to produce a state of emotion by conscious effort; even his supposedly normal controls were apparently able to produce these changes at will.

Sargant and Finesinger both considered these cases from a hyperventilation point of view, and they seem to believe them to have a psychological origin. Lewis, on the other hand, considered them from the point of view of a cardiologist, and in the end he left the question of causation open. This difference of view is of more than academic interest, for in the training of a great army large numbers of cases of effort syndrome will almost certainly emerge, and the decision will have to be reached as to how and by whom they are to be treated. An attempt should be made to obtain an authoritative ruling on the point before cases begin to reach the hospitals.

1. Soley M. H., and Shock, N. W. *Amer. J. med. Sci.* 1938, **196**, 840.
2. Lewis, T., *Spec. Rep. Ser. med. Res. Coun., Lond.* 1917, No. 8.
3. Finesinger, J. E., *Arch. Neurol. Psychiat.* 1939, **42**, 425.

ALCOHOL IN THE MOTORIST'S BLOOD

THE suggestion has often been made that determination of the alcohol content of the blood, urine, or expired air should be a routine measure in cases of suspected drunkenness while in charge of a car. The interpretation to be placed on the figures obtained is difficult to decide, and a paper by Jetter [1] does not make the problem easier of solution. The majority of previous workers have found that everyone is in a state of intoxication by the time a blood-alcohol level of about 250 mg. per 100 c.cm. is reached, whereas in Jetter's series the level necessary to include everyone is 450 mg. per 100 c.cm. There is no evidence that a chronic drinker metabolises alcohol quicker than normal, but Jetter has found experimentally that chronic drinkers are "relatively sober" by all clinical tests, with blood-alcohol contents of 350–450 mg. per 100 c.cm., while a control group of teetotallers and occasional drinkers all showed clinical intoxication at a level of 200 mg. From the motoring point of view the most dangerous person is not so much the one who is clinically intoxicated as the one who has taken sufficient alcohol to remove some inhibitions and prolong reaction times. There seems little doubt that even small quantities of alcohol make a driver less efficient, and many writers and committees have suggested that a blood-alcohol figure of 150 mg. per 100 c.cm. is sufficient in itself to show that a man is unfit to drive. Even though the chronic drinker may not be clinically intoxicated at this level his faculties are sufficiently impaired to make him a danger in a car. Whatever may be the official view of such a finding in a man who is clinically sober, one unquestionable advantage in the determination of the blood-alcohol content is that it gives a definite indication of how much alcohol a man has drunk, and in this way may afford corroboration or otherwise of his story.

DISEASE IN CHINA

THE most profitable development of public-health work and preventive medicine can clearly only follow the measurement, or at least assessment, of the incidence of different diseases within a community. Even at the best of times such knowledge has been merely sketchy in China and one of the first tasks undertaken by the Henry Lester Institute of Medical Research at Shanghai was the attempt to make a substantial addition to it by the systematic collection and analysis of records from hospitals throughout the country. Even this approach is strictly limited in its field of observation since hospitals are situated only in urban areas and their patients mainly urban dwellers, who comprise but 15 per cent. of the total population of China. By this means, however, over half a million records were amassed in the two years 1933–34 and a detailed survey of them has been made by Dr. Sutherland Gear in the first general epidemiological and morbidity survey of China.[2] In both years the same list of diseases predominates. Roughly 20 per cent. of the total cases were diseases of the skin and cellular tissue—boils, scabies, dermatitis, abscesses and other pyogenic infections; another 10 per cent. were the result of violence; 8 per cent. were due to diseases

1. Jetter, W. W., *New Eng. J. Med.* 1939, **221**, 1019.
2. *Chin. med. Ass. spec. Rep. Ser.* No. 11. Pp. 183. 4*s.*

of the digestive system, 6 per cent. to venereal diseases and 5 per cent. to tuberculosis. Of the last, two-thirds were of the respiratory form, a proportion agreeing closely with that for an Indian population of Calcutta living under similar conditions, but the survey demonstrates that lymphatic and skeletal tuberculosis and intestinal and peritoneal forms are by no means rare. The prominence of the causes listed, together with the prevalence of eye and ear diseases and helminthic conditions, emphasises the part played by dirt and poverty and the need for preventive medicine. Dr. Gear suggests that, with extremely limited resources, the best results might be obtained through a system of clinics and dispensaries rather than through hospitals. The former, besides offering the palliative treatment essential in converting a people to modern medicine, could also undertake the more urgent duty of "spreading the gospel of sanitation and hygiene." The great lesson of his survey is, he concludes, the call for such simple and widespread education in China.

CURE OF PROSTITUTION

FROM the social standpoint prostitution is a sore on the body politic leading to crime and disease, and therefore something to be tackled primarily as a problem of public health and social hygiene. The religious standpoint is older and more obvious; and it was religious organisations that made the earliest and most persistent attempts at reclamation. The outlook until recently has been almost hopeless, for only a small minority of prostitutes want to be helped. Many take to the life because they are mentally subnormal. Many do so from laziness, or because they have psychopathic temperaments, or from chronic ill health or moral weakness. It is as a rule only when labour conditions, destitution or an unhappy childhood have driven a woman into prostitution that there is much real hope of rehabilitating her; and naturally the younger the prostitute the more easily she responds.

In their third and final volume on this subject,[1] which is complete in itself, the League of Nations committee of investigation describes the facilities available for giving assistance in the various countries and how these are made known by the authorities to those they wish to rescue, On the Continent the "Good Shepherd" institutions, organised and run by the Sisters of Charity and dating back to the seventeenth century, have been pioneers in this work. The "Houses of Bethany" and the Salvation Army also work on religious lines. In the "Army" institutions, of which there are 186 scattered all over the world, more than 2700 women passed satisfactorily through the homes during 1937. Most of these were unmarried mothers and girls rescued from commencing prostitution. Hospitals for venereal diseases naturally lend themselves to attempts at rehabilitation. It was the fact that most women discharged cured from the London Lock Hospital returned perforce to prostitution that drove the Rev. Samuel Scott, the commentator, to found the rescue home of the institution in 1787, and this work has continued uninterrupted ever since.

Rehabilitation requires two or three years of institutional training, and even then obvious difficulties arise outside, which often completely nullify the results of the training. Life in an institution saps independence, and the inmates feel lost when they leave and readily lapse again into prostitution. That is why it is suggested that as a routine they should be reintroduced to the rush of life by residence in hostels after discharge. The training given was until recently mainly in laundry or domestic work, and this often proved uncongenial. The tendency now is to train the women for posts different from those they occupied before they succumbed to temptation. The League's committee concludes that, although rehabilitation is difficult, yet within limits it is both feasible and successful.

1. Methods of Rehabilitation of Adult Prostitutes. London: Allen and Unwin (League of Nations Publications Department). 1939. Pp. 157. 3s. 6d. The previous volumes were "Prostitutes, their Early Lives" and "Social Service and Venereal Diseases," both published in 1938.

RIDDLE OF HYPERTENSION

THE conjecture of Bright that some forms of hypertension were of renal origin was first proved by Goldblatt and his colleagues,[1] who experimentally produced persistent hypertension by causing ischæmia in the kidney of a dog by partially occluding the renal artery. Harrison and others[2] and Prinzmetal and Friedman[3] found increased quantities of renin in such kidneys. Landis and others[4] showed that in one respect renin was the only chemical known whose behaviour resembled that of the causal agent of hypertension in man: the peripheral blood-flow remained unaltered. An obvious step was to discover whether the mechanism was humoral or nervous. Pickering[5] abolished the vasomotor control in a limb and found the peripheral blood-flow in hypertension unaltered by so doing, from which he deduced that the mechanism was chemical. The same investigator[6] transfused blood from hypertensives into anæmic patients and found no appreciable rise of blood-pressure even with 600 c.cm. He concluded[7] that the pressor substance was quickly fixed by the blood-vessels. This line of research was carried further by Fasciolo and others,[8] who, by experimentally grafting an ischæmic kidney from a hypertensive dog into the neck of a nephrectomised dog, proved the release of a pressor substance into the circulation. Fasciolo[9] has performed further experiments on dogs, and these are a few of his conclusions:—

(1) Hypertension is not due to a renal reflex, because total renal denervation cannot prevent the rise of blood-pressure which follows ischæmia, and resection of the whole sympathetic chain, section of the anterior roots, or destruction of the medulla neither prevents nor cures this form of hypertension.

(2) The release of a pressor substance into the circulation is confirmed by the fact that venous blood from an ischæmic kidney acts as a powerful vasoconstrictor when injected into the isolated foot of a toad or of a dog, whereas venous blood from a normal kidney does not.

(3) The latter fact also shows that the pressor substance acts directly on the capillaries and not through the nervous system or through the suprarenals. The theory of suprarenal action is also contradicted by the facts that the grafting of an ischæmic kidney into the neck of a suprarenalectomised dog raises the blood-pressure, and that the extirpation of the medullary portions of the suprarenals does not prevent hypertension due to renal ischæmia. (Com-

1. Goldblatt, H., Lynch, J., Hanzal, R. F. and Summerville, W. W., *J. exp. Med.* 1934, **59**, 344.
2. Harrison, T. R., Blalock, A. and Mason, M. F., *Proc. Soc. exp. Biol., N.Y.* 1936, **35**, 38; and *Arch. intern. Med.* 1937, **60**, 1058.
3. Prinzmetal, M., and Friedman, B., *Proc. Soc. exp. Biol., N.Y.* 1936, **35**, 122.
4. Landis, E. M., Montgomery, H. and Sparkman, D., *J. clin. Invest.* 1938, **17**, 189.
5. Pickering, G. W., *Clin. Sci.* 1935–36, **2**, 209, 363.
6. Pickering, *Ibid*, p. 185.
7. Pickering, *Brit. med. J.* 1939, **1**, 1.
8. Fasciolo, J. C., Houssay, B. A. and Taquini, A. C., *J. Physiol.* 1938, **94**, 281.
9. Fasciolo, J. C., Hipertension arterial nefrógena, Buenos Aires, 1939.

pletely suprarenalectomised dogs do not maintain hypertension unless given cortical extract.)

(4) Extirpation of the gonads or of the thyroid does not modify this form of hypertension. (Hypophysectomised dogs do not maintain the rise of blood-pressure.)

(5) The intact kidney of a dog with hypertension due to unilateral renal ischæmia exerts some influence in reducing the blood-pressure.

(6) The rapid rise of blood-pressure caused by renal ischæmia produces generalised vascular lesions manifested by exudations and hæmorrhages.

(7) The part played by renal ischæmia is proved by the rapid cure of hypertension by the ablation of the diseased kidney.

Meanwhile Corcoran and Page [10] have, by slow intravenous infusion of renin, caused in the dog increased arterial pressure, renal vasoconstriction (especially of the glomerular efferent arteries), and a reduction of blood-flow through the kidney. The result of this experiment suggests the possibility of a vicious circle: renal ischæmia produces renin, and renin causes renal ischæmia.

Thus the humoral theory apparently prevails against the nervous, at any rate as regards experimentally produced hypertension; but the occasional absence of any discoverable lesion or abnormal renal function (which absence originally led to the differentiation of essential hypertension) leaves room for another ætiological explanation. Indeed, Wittkower [11] claimed to have proved the existence of a psychogenetic hypertension, which he regarded as a special type of cardiac neurosis, and he reported good results from psychotherapy. Here, again, there seems to be a vicious circle: psychogenetic hypertension can produce arteriosclerosis, and cerebral arteriosclerosis produces typical psychoses. Krapf [12] wrote: "Arterial hypertension actually has a psychiatric characteristic of its own, and the clinical picture in hyperpiesis is very different from that observed in 'pure' (non-hypertensive) arteriosclerosis of the brain vessels."

THE DIGITAL PLETHYSMOGRAPH

An increasing amount of work is being done, particularly in America, on peripheral vascular disease. In these studies the peripheral circulation has mainly been investigated in the digits by means of changes in the skin temperature registered by a thermopile. While this method can scarcely be bettered from the point of view of accuracy, it has the disadvantage of requiring an experienced investigator and working conditions that are seldom available outside special research departments or laboratories. Johnson [13] has now described a modified form of the digital plethysmograph which he first described some years ago.[14 15] With this instrument he claims that satisfactory photographic records of volume changes in the fingers can be made rapidly and accurately in an ordinary hospital ward. Changes as small as 0·002 c.cm. can be measured, and he claims that they afford an index of the peripheral circulation. In support of this contention he shows that calculations of the stroke output of the heart by his apparatus gave figures comparable to those obtained by other recognised methods, and comparable results were also obtained in the measurement of the effects of vasoconstrictor and vasodilator agents on the peripheral circulation. In one patient with Buerger's disease and one with multiple arterial emboli the plethysmographic records were confirmed at necropsy. If these findings are confirmed, and there seems to be no reason why they should not be, the digital plethysmograph will be a valuable asset to the clinician.

10. Corcoran, A. C. and Page, I. H., *Amer. J. Physiol.* June, 1939, p. 354.
11. Wittkower, E., *J. ment. Sci.* 1935, **81**, 553.
12. Krapf, E., *Ibid*, 1937, **83**, 536.
13. Johnson, C. A., *Surg. Gynec. Obstet.* January, 1940, p. 31.
14. Johnson, *J. Lab. clin. Med.* 1931, **17**, 59.
15. Johnson, *Surg. Gynec. Obstet.* 1932, **55**, 731.

VASCULAR COMPLICATIONS IN DIABETES

The changing outlook in diabetes mellitus is well illustrated by an analysis by Fletcher and Graham [1] of 1100 cases admitted to the Toronto General Hospital during 1933–37. In this series there were 114 deaths, of which only 14 were due primarily to coma and 48 were attributable to cardiovascular complications. The average age at death in the cases with cardiovascular complications lay in the seventh decade, a period in which such complications may be expected even in the non-diabetic. Root and Sharkey [2] first clearly demonstrated that the fatality-rate from arteriosclerotic causes was higher in diabetes than in others, and pointed out that the essential pathological lesion was one of atheromatous degeneration in the smaller arteries rather than the more usual medial changes found in older subjects. Fletcher and Graham feel that too much stress has been laid on the factor of atheromatous degeneration in the causation of vascular changes in diabetes. Histological examination of the smaller arteries in the amputated limbs of their diabetic patients revealed little recognisable lipoid change but rather an intimal thickening due to fibrous proliferation, scarring and hyaline changes. They conclude that "it is reasonable to look upon the metabolic upset of diabetes not as the primary cause of arteriosclerosis but as an aggravating influence upon a process which is almost universal beyond a certain age period." They disagree with the Joslin [3] school in that they do not consider that a high fat content of the diet or a high blood-cholesterol reading are necessarily inducive to arterial changes. Duff's [4] suggestion that before the onset of atherosclerosis in experimental animals there is some primary damage to the intima such as might be brought about by acute or chronic bacterial injury, coupled with the lowered resistance to infection of diabetic patients, leads Fletcher and Graham to urge that all possible measures should be taken to prevent infection in diabetics. They emphasise that control of the hyperglycæmia in the infected cases is not synonymous with the development of immunity. In their present series at least 35 out of the 114 deaths were attributable to infective causes.

The essential factor in the prevention of cardiovascular complications is a high standard of treatment, together with the teaching of all measures used for the prevention of arteriosclerosis in the non-diabetic —for example, the avoidance of smoking, alcohol, trauma, infection and so on. The fact that the incidence of fatal gangrene was almost negligible in their hospital-treated patients, and that more than half the deaths from coma were the result of patients' carelessness in carrying out treatment, adds further weight to the opinion already expressed by Ferguson [5] that the immediate problem in the treatment of diabetes mellitus lies in making available to all diabetics the high standards of treatment which are at present only obtainable in a few selected clinics. What criteria may be accepted as sound in the manage-

1. Fletcher, A. A., and Graham, J. W., *Canad. med. Ass. J.* 1939, **41**, 566.
2. Root, H. F., and Sharkey, T. P., *Ann. intern. Med.* 1936, **9**, 873.
3. Joslin, E. P., Treatment of Diabetes Mellitus. Philadelphia. 6th ed. 1937.
4. Duff, G. L., *Arch. Path.* 1935, **20**, 81 and 259.
5. Ferguson, T., *Acta med. scand.* supp. 90, 1938, p. 25.

ment of the diabetic patient? The authors recommend 50–75 g. of protein of good biological value, the remaining calorie requirements being made up of equal parts of carbohydrate and fat, the amounts depending on the build, activity and sex of the patients rather than on their weight. The amount of fat allowed is therefore about 100–130 g. for women and 130–150 g. for men—rather more than is usually prescribed in this country. They have found that with larger quantities of fat the diabetes is better controlled, there is less fluctuation in the blood-sugar level, and both the quantity of glucose excreted and the insulin requirements are less. They advocate the use of protamine zinc insulin together with half the amount of regular insulin given at the same time shortly before breakfast. In a few cases it may be necessary to give in addition a small injection of regular insulin before the third meal of the day. They remark too that if patients are to adhere to their diets they must be given enough to satisfy them and must weigh their food often enough to check their powers of estimation.

PERNICIOUS ANÆMIA AND GASTRIC CANCER

A GOOD example of the ineffectiveness of existing medical statistical organisation is the controversy which still goes on as to whether people with pernicious anæmia are specially liable to carcinoma of the stomach. From the medical unit of the Binnengathaus at Amsterdam Jenner [1] has produced a painstaking survey of the problem. In addition to reviewing the literature and giving an excellent bibliography, he has verified the after-history of 181 patients with pernicious anæmia for periods up to fifteen years, and his series includes 7 patients who subsequently developed gastric cancer. He believes that this number is significantly above what would be expected on the basis of chance and argues that a common cause—gastritis—is responsible for both conditions. It is not clear that these conclusions are justified. The method employed for calculating the standard deaths is open to criticism and there is a serious mathematical slip. Insufficient data are given for exact recalculation, but the figure given appears to be five times too small. Jenner's series shows the same features as other published ones. There is a high proportion of old patients, 5 out of 7 are over seventy and only 1 is under sixty-five. The interval between the first diagnosis of anæmia and death from gastric cancer is relatively short. And in 76 post-mortem examinations on cases of pernicious anæmia there are no fewer than 4 benign tumours of the stomach. Leaving aside the theoretical interpretation of these findings, ample evidence now exists that either pernicious anæmia or a disease indistinguishable from it is often associated with an early gastric cancer. But after the first four or five dangerous years have passed it has not yet been proved that people with pernicious anæmia are more prone to gastric cancer than anyone else. If there is any increased risk it must be very small.

"THE BIRTH OF A BABY"

A PROPAGANDA film on childbirth, prepared for the American Committee on Maternal Welfare Inc., is to be shown in England by the National Baby Welfare Council to people over eighteen, men and women being in separate audiences. As Dr. D. H. Geffen said in introducing the film at the New Gallery Cinema on Feb. 8, much in it calls for criticism from the medical profession, and undue prominence is given to certain points, with the object of holding the attention of the public. The film lasts about an hour and a quarter, and it only gets going after a series of unrelated "stills" of babies, nurses, and creches and a long list of American sponsoring societies that mean nothing to the average Englishman. Then it plunges into a discussion between a mother and her daughter, who has just reached puberty, about the danger of bathing in cold water. With the help of diagrams of ovaries and uterus menstruation is explained. The mother's daughter-in-law now reveals her pregnancy and visits the doctor, who physically examines her in such a way that a layman cannot understand what is happening, and the doctor performs tests with tubes and apparatus—again without explanation, but perhaps heightening the mystery to keep the layman's attention. Much of the action of the film consists of entrances and exits, opening and shutting doors, going up and down stairs, moving from one room to another, saying "Good morning" and "Good-bye, Doctor" or telephoning, and could be cut without loss. Besides lecturing the daughter-in-law on embryology, parturition, and diet for expectant mothers, the doctor warns another woman of the evils of inducing abortion, and his receptionist, displaying samples, tells the expectant mother about baby clothes and diapers and visits her house to give advice about removing rugs and placing lights for the forthcoming happy event. Perhaps one of the most effective "stunts" is the amplified sound of the fœtal heart beat, and many doctors will think this alone worth their one and sixpence, but an uninformed layman might take it for the hum of traffic or of a dynamo penetrating the theatre. To the layman the high spot of the film will be the baby's head being born and the tying of the umbilical cord. But there is not a snigger in the film.

Dr. HERBERT CAMPBELL THOMSON, who died at Dulverton on Feb. 11 in his 70th year, had been physician for nervous diseases at Middlesex Hospital and physician to the Maida Vale and Bolingbroke hospitals. For long dean of Middlesex, he wrote many of the hospital medical reports and became historian of the medical school.

Sir JOHN MOORE, who died on the same day, was director of veterinary services to the B.E.F. 1914–18, later taking charge of these services in India. For several years he was colonel commandant of the Royal Army Veterinary Corps. He was 75.

The Home Secretary intends to make rules amending the Poisons Rules, 1935, and an order amending the Poisons List. Copies of the draft rules and of the draft order may be had (1*d.* each) from H.M. Stationery Office. Any representations in regard to the amending rules or order should be made in writing addressed to the Under Secretary of State, Home Office, Whitehall, S.W.1 as soon as possible and in any case not later than March 19.

". . . The whole quarrel between science and philosophy is a quarrel about nothing. . . . Purpose is simply not within the terms of scientific reference, and can no more be investigated by science than colour by a microphone. . . . The philosophers have behaved like a man crying querulously to his chauffeur: 'Do you mean to tell me that this machine of yours is just as capable of taking me to Hanwell as to Harrogate? The thing's a public menace. I don't believe you know your job. Give me the spanner.' The scientists, on the other hand, have been too apt to retort: 'There's nothing about Harrogate in the specification of this car, and you can take it from me, you silly old cuckoo, that Harrogate doesn't exist, except in your own mischievous and superstitious imagination.'" (I thus record my personal impression that, on the whole, the philosopher is the more chicken-hearted and the scientist the ruder of the two.)"—DOROTHY L. SAYERS in "Begin Here," London, 1940.

1. Jenner, A. W. F., *Acta med. Scand.* 1939, **102**, 529.

THE PROBLEM OF ADOLESCENCE

The Morison lectures delivered at the Royal College of Physicians, Edinburgh, on June 8 and 9, 1939, by

HENRY YELLOWLEES, M.D., F.R.C.P., *physician for mental diseases to St. Thomas's Hospital*

III

WE left off, you will remember, just as mother had called in the Doctor—usually, of course, the general practitioner. But, before discussing his approach to the situation I tried to describe yesterday, I should like to discuss with you the further adventures of the given child Alpha, and to indicate in quite general terms some possible ways of helping him, and their limitations. We can then consider the position of the practitioner in more detail. Let us, therefore, return for a few minutes to our Garden of Eden analogy. We left our given child, if you remember, well out on the road and moving further from the garden gates every day, but with his gaze so fixed upon the place whence he came out that, for all practical purposes, he may be regarded as walking backwards. What is to be done for anyone who shows in numberless different ways that he is in this awkward predicament, with his obstacles continually knocking against his heels because he is not looking where he is going? There are obviously two distinct methods of dealing with the situation, and I shall first refer to the one which is highly popular with patients, parents and physicians. We approach the individual and invite him to lean upon us, assuring him that while he leans we will sweep the road clear for him, and help him to stagger along it backwards. We call on so many different agencies to help him to lean and us to sweep, that it is impossible to enumerate them all. Good advice, grave remonstrance, Christian Science, auto-suggestion—with or without the piece of knotted string—New Thought (whatever that may be), the Oxford Group, other more mature forms of the Christian faith, Pelmanism, unfired food, dietetic and psychological magic of various kinds, change of occupation, a quiet home in the country, to which last the singularly inaccurate label "free from the taint of lunacy" is generally appended, and so on and so on. Now many of these agencies are most admirable things in themselves, and even when used in the circumstances I have indicated they may well do a certain amount of good. If the patient leans hard enough and the remedial agency, whatever it is, sweeps hard enough, no doubt progress of a kind will be made, but it is surely obvious that, quite apart from the exhaustion which both patient and physician are likely to experience, such an arrangement can never result in anything but, at the very best, a slow, irregular and lop-sided form of progression. The patient's contribution, I remind you, is limited to leaning hard, and, with that said, I leave you to form your own judgment upon the merits of this proceeding. On the other hand, let us suppose that the physician approaches the patient determined that their united efforts shall, in the first instance, be concentrated on one single purpose only, namely, to turn the patient on his own axis through an angle of 180°—through half a circle. Let us suppose, too, just for once, that between them they succeed in the task, then some rather wonderful things happen. To begin with, if the patient can once turn round, the bonds which kept him facing gardenwards will slacken, and weaken and break, and at last he will be free from subjection to the old garden law, "Thou shalt not." More important still, he will, for the first time, become able to see the obstacles in his way clearly, and he will thus be able to coöperate intelligently in the work of avoiding, removing or surmounting them. Best of all, he will be in a position to see where he is going, to lift up his eyes, and discern in the distance glimpses of certain very worth-while completions and fulfilments and rewards, and towards these he will be able to struggle, no longer held back by the negative restraint of prohibitions, but attracted forward by the positive constraint of ideals. Now is the time for any number of remedial and supporting agencies to step in and do their work. The patient may still need them for many a day, and will still need the very best that you, his physician, can do for him, but the relationship between you is vastly changed. From being a veritable old man of the sea upon your shoulders, he has become someone who can respond to your help and coöperate with your efforts, someone to whom it is possible and worth while to be a guide, philosopher and friend. You have become a colleague, and ceased to be a crutch.

That is the end of my little analogy. I have tried, for the reason I gave yesterday, to avoid as completely as possible all medical or psychological expressions, but I repeat what I said at the beginning, that the whole picture is one which only the concepts and researches of modern medical psychology make it possible for me to present to you at all. Further, I do not think that any medical psychologist, though he would certainly differ from me on any number of technical points, would seriously quarrel with my analogy, or indeed with anything I have yet said. He might, however, express much of it in quite a different way. Take, for example, that phrase I used, "the place whence they came out." He might say that it obviously and literally refers to their mother's womb, and I should reply that he was perfectly right as far as he went, if he cared to put it in that way. He would at least be every bit as "right" as I am in calling the psychologically infantile state the Garden of Eden. It is really a question for the unfortunate audience to decide. They might dislike the horticultural and biblical air of my analogy even more than they might object to the definitely obstetrical flavour of his. Remember that we are dealing with abstractions—with mental concepts—and that some form of picture, allegory or symbolism is the only possible means of communication we have regarding them, once we leave the research laboratory. I must take the risk of the analogies I choose not appealing to you in the way they do to me. All of them are bound to be pathetically incomplete and partial. They are different ways of groping at one or two of the myriad facets of a stupendous whole. Any contribution to a problem such as this is gravely weakened if it is expressed in a language that only the contributor and his intimates can understand, and it may become wellnigh valueless if they will not realise the elementary truth that different pictures may express the same idea, and that apparently incompatible conclusions are often simply the results of views from different angles, expressed in different ways. They are not contradictory, they are complementary, and sometimes they are merely different ways of saying the very same thing. A picture of Stirling Castle from the west may be either a daub or a supreme work of art. It all depends, not upon the point of view, but upon the artist, and if he *is* an artist, he

will be the first to appreciate that an equally fine picture of Stirling Castle may be made from the east. In fact, he'll try it himself some day. Or if somebody else does so, and a collector purchases both pictures and compares them, the fact that they have been made from opposite points of the compass will have little weight in influencing his judgment between the two. Though the point may seem elementary, I make no apology for stressing it, and expanding it. Its importance, particularly in medical psychology, can hardly be overestimated.

It is a pitifully common error, and also the distinguishing mark of a small mind, to imagine that out of all the ways of approaching any subject, one way—usually one's own—is the *right* way, and all others are *wrong*. This applies, I should say, to almost everything in life except, perhaps, mathematical science, from the great realities down to everyday happenings. We constantly hear the phrase: "That is *your* point of view," but unfortunately it is generally used in a somewhat disparaging way which blinds us to its real significance. "That is *your* point of view," says one disputant, and sadly often a disputant on a religious or a medical matter, to his opponent, and what he really means is: "You are too bigoted to see that there are other points of view, for instance, mine, which happens to be the right one, or at least a better or more complete one than yours." That, of course, is playing with language, and making a parade of broadmindedness merely a cover for the very opposite.

We may take it that all schools of psychology, and indeed all thinking contributors to the matter, would agree that this turning round process, in whatever language they may express it, is an essential part of all satisfactory treatment. The differences of opinion arise over the question of how it is to be done. Will suggestion do it? Is it the same thing as the religious conversion of our fathers? Can the parents do it for the child? Will medicine do it? Can the child do it for himself? And so on. Now, about all this, medical psychology has a very great deal to say. As I have mentioned more than once, its contribution, not only to elucidating the nature of the problem, but to providing a satisfactory solution, stands alone in its value, but I have also pointed out that to enlarge upon this would lead us nowhere, and give us in the end a limited view. It would be easy and fascinating to expound the theories of organisation and development of the libido, regression, fixation and the like, which may fairly claim to be the scientifically established foundations on which modern psychotherapy rests, but these could be more suitably discussed at a meeting of a clinical medical society than on the present occasion.

You will remember that I said at the beginning that the application of medical psychology to treatment had certain important limitations, and I think that my survey will be more complete and more practical if we proceed to deal with that point now and discuss why medical psychology cannot always provide a wholly satisfactory solution of the problem it has done so much to elucidate. Why are its results not always so good in practice as they certainly ought to be in theory? To answer this fully, I should have liked to deal separately with that system of psychology and method of treatment which, by its own fatal choice, stands alone in splendid isolation under its trade name of psycho-analysis—a name, by the way, which should have been made copyright long ago. Considerations of time, however, make this impossible, and I am forced in what I have to say on the subject to merge it with the various "lesser breeds without the law," though it is hard to say which of the parties would feel the more cruelly insulted by this proceeding. I shall try, however, not to be unfair. The central reason why psychological results are disappointing is parallel to the reason why the experiments of the research physiologist have sometimes a way of succeeding in his laboratory and failing in the sick-room. In other words, because a human being, and especially an adolescent human being, is a different thing from a test-tube. Psychology fails not because it is inaccurate; it is amazingly accurate, provided, of course, that you make the allowance for different modes of expression, of which I spoke a few minutes ago. It fails because it is inadequate.

You remember we have boiled down the problem of treatment to the matter of turning a patient through half a circle on his own axis. Up to that point, and often after it, psychology does splendidly, but when it comes to the actual effort to turn the patient round, it is sometimes of little help. I may mention, by the way, that the psycho-analytic school not only admit that fact, but, it is not unfair to say, take a definite pride in it. The turning round is to come of itself as a consequence of the investigation of the case. Not so very long ago a leading psycho-analyst referred to "the series of events in space-time which constitute the living self." I do not think he was conscious of the delightful old-world fragrance of his remark, because the philosophy, if any, of all psycho-analysts is vintage 1890, or thereabouts. An equally eminent colleague of that gentleman clinched the matter when he pointed out that "complete objectivity on both sides" was the ideal to aim at in treatment. I think that this ideal might be reached if two fossils were placed carefully side by side and left to it, but any psychology that not only conceives it possible, but even recommends it as desirable, in approaching an adolescent, of all people, stands eternally self-condemned. I have said that whatever else we are doing, we are dealing with personalities, and the scientific method which we have been taught, and to which we very rightly cling, cannot, unaided, suffice for us here.

By far the most efficient and most generally applicable means which mankind possesses of solving problems—that is to say, of seeking truth—is called scientific method. Its very excellence, however, tends to blind us to certain of its very important limitations. First, there are many problems to which it is inapplicable. Second, there are still more to which it can only provide a partial or incomplete solution. Finally, there are other methods, equally valid, for investigating certain problems, which have nothing in common with science and which science can never understand. They all have one important characteristic—namely, that they never contradict science; they transcend it. Our problem is surely an outstanding instance of one to which a purely scientific approach is obviously and grotesquely impossible. If what I have said about the problem is even remotely accurate, then any attempt at a solution by scientific method alone stands condemned as inadequate from the start.

Life is a bigger thing than medicine, and it is not unscientific to realise that life is a problem which is by no means wholly amenable to the measuring rod which some of us call science. Believe me, no man can know very much of real medicine or, for that matter, of real life either, until he has learned that there are many aspects and vast regions of reality which science alone can never apprehend.

"Science discovered Philosophy," says MacNeile Dixon in that truly noble book, "The Human Situation," and he proceeds in a wonderful chapter to point out how science and materialism are one and cannot

live apart. "Matter talks matter, and science knows no other language. Suppose another order to exist, suppose an independent world of thought, science has no means for its exploration. . . . To admit a world beyond her powers of inspection were to sign her own death warrant." And that is precisely the position of scientific psychology in general, and psychoanalysis in particular. The latter, indeed, flushed perhaps with her triumphant successes in establishing the very foundations of mental life, became more royalist than the king, and remains an example to all diehards. Not only did she take no part in the discovery of philosophy, but she pleads, or rather asserts, first that there is no philosophy to discover, or that the discovery was never made, or that it is a useless discovery, or that she will cut philosophy dead whenever she sees her, or that she knew all about it all the time. One by one what used to be called the complete sciences, those perfect ladies, have been forced, with varying grace, to acknowledge that their domains are bounded, if not actually invaded, by philosophy, which begins where they leave off, but psychology, who was the last to enter the charmed circle, and whose position therein has been more than once a little uncertain, holds out to the last. She could not conclude an alliance with philosophy without the most painful consequences. She is not satisfied with our acknowledgment that her views and explanations are correct—she insists that they are also complete. "There is nothing in life," she states, "that could not be explained in terms of scientific psychology if we only knew enough of it," and she holds that it is only the complexity and not the essential nature of adolescent disturbances that prevents them from being completely remediable by application of scientific method. This almost passionate refusal to regard a human being as anything more than a very complicated machine is one of the strangest and saddest characteristics of scientific psychology. It is the fundamental reason why its applications to life are often disappointing, and why so much of our psychotherapy is tawdry and commonplace. After all, the final function of a motor-car is not to be a perfect piece of machinery; it must move, and it must move somewhere, and, to help it to carry out these functions, the skilled mechanic must also be a skilled driver who possesses road-sense and knows where he wants to go. It is all rather sad, because in a sense it is just the old "point of view" trouble over again, and in her insistence that she is not only the true word, which everyone admits, but the very last and only word upon mental life, scientific psychology falls below her own standards and ceases to be really scientific.

Let me offer you a very simple and homely illustration. Several years ago I was in the office of a travel agency, with a very old intimate friend, engaged in filling up a passport application form on behalf of a lady I know very well. I found great difficulty in furnishing accurate answers to the almost crudely personal questions which confronted me regarding the colour of her hair, the number of her teeth, the shape of her nose, and so forth. On leaving, my friend commented on this and said, "Don't you know what your own wife is like?" To which I replied, in what must have been a fairly luminous moment, "Yes, I know what she's like, 'She walks in beauty like the night of cloudless climes and starry skies,' but I couldn't tell them that on the form." Even after making allowances for personal prejudice, it is clear that both descriptions were valid and accurate from different "points of view." They were mutually enlightening and complementary, and to call one the true description, and the other the false description would have been the height of folly. The scientific outlook accepts the first and is, or ought to be, regretfully agnostic about the second, regarding which it should have nothing whatever to say, unless, indeed, it suggests that it is an insult to astronomy. The person who is a lover of science but not her slave, and who realises that it is life that includes science, and not vice versa, may be inclined to prefer the second description, but cheerfully accepts the accuracy, so far as it goes, of the first. The more scientific you strive to be, the more self-limited does your scope and outlook inevitably become, the more do you limit yourself to the "mental truths" of the sciences, and the more do you exclude the truths of experience. Now this is very unfortunate, because that variety of truth plays an enormous part in the life of the adolescent. He is so made that among the things which are most real to him are a multitude of enthusiasms, ambitions, hopes, plans and loyalties, which have no correlates in scientific psychological language.

I mentioned yesterday a few of the outstanding characteristics of adolescence, and omitted one which for our immediate purpose is as important as any—namely, the universal craving of the adolescent not for mere adventure only, but for the heroic, the dramatic, the hero-worshipping and, above all, the mystical. I am well aware that this craving, though it is hard even to put it into ordinary words, can be analysed down, traced back, and expressed in terms of psychological mechanisms, but, as invariably happens when such attempts are made, something eludes us in the process.

The adolescent, for example, is thrilled by the sight of the Forth Bridge, his heart leaps up when he beholds a rainbow in the sky, he is still saddened by the mournful story of Flodden, he rejoices over Wallace and Bruce, he finds inspiration in the twenty-third psalm. (Alpha is obviously a good Scot!) Now these experiences are of the nature of what Sir Arthur Eddington calls "intimate knowledge," as opposed to the "symbolic knowledge" which is psychological science. In a chapter on science and mysticism in his wonderful book "The Nature of the Physical World," Eddington points out that the moment we attempt to analyse such knowledge, the intimacy vanishes, and is replaced by symbolism. In that fact—which I am sorry time prevents us discussing more fully—lies the explanation of the comparative inadequacy of much psychological treatment. The most exhaustive reductive analysis of a picture of the dawn into its constituent chemical parts fails somehow to explain either the picture or the dawn. Complete objectivity has its limitations. No scientific instrument or procedure can register all the long long thoughts of youth, or assess their worth. Remember that our scientific psychology is an essential. Heaven preserve us from the amateur whose entire stock-in-trade consists of a kind heart. The point is that we must add to our science something which transcends it. We must turn the adolescent round with the apparatus that he is most likely to tolerate, that is in the language that he is most likely to understand. We must try, with a tireless patience, to approach him, not only with the methods of science, but in the spirit and language of human comradeship and understanding, with which science has nothing to do.

I wonder what the adolescent feels about it all? Does he realise that

> "We are afflicted by what we can prove,
> We are distracted by what we know."?

Does he wonder, as I have often done, whether his parents and the doctor have completely forgotten every

single impulse and feeling and thought that possessed them when they themselves were young? I sometimes imagine that, if he were not too frightened to plead with us at all, he might do it in some such words as these:—

"Not as one blind and deaf to our beseeching,
Neither forgetful that we are but dust,
Not as from heavens too high for our upreaching,
Coldly sublime, intolerably just."

No, please not. And let us remember that if our patient—or our child—*feels* us to be so, then we *are* so to him. It is a matter of feeling, with which objective fact has nothing to do. No man has ever yet found real medical or psychological or social or moral salvation by adherence to codes, rules, schedules or systems of psychology alone. None of them can exert a permanent and effective influence on a youth's mind and conduct and life unless and until he is able, in some way, no matter how faulty or indirect, to discern a human touch in them, and to link them up with a personality. Many of you will remember how wonderfully this truth is expressed in Browning's "Saul."

". . . . it shall be a face like this face that receives thee;
a hand like this hand
Shall open the gates of new life to thee."

SPECIAL ARTICLES

A SOCIALIST VIEW OF MEDICAL SERVICES

MOST commentators, and all the younger ones, seem to agree that there is something radically wrong with the scope and organisation of our health services. The Joint Medical Socialist Committee, which is made up from the Socialist Medical Association, the Left Book Club Medical Group and the University Labour Federation, shares this view, believing that the health of the people is at stake, that never has there been such an opportunity to get things changed, and that profession and public must make known their wishes. But here is the rub, for there is little unanimity of purpose other than a zeal for reform; *tot homines, quot sententiæ*, which, things being as they are, is conducive to the status quo.

The committee favours the abolition of the panel as such. Its members would like to see the panel doctor become a salaried family doctor with a group of patients for whom he is responsible in sickness or in health, receiving in return economic security and remuneration similar to that to which he has been accustomed.

The major proposals are these. Regional coördination of existing health services; democratic control of the services by local authorities with full representation of all lay and medical interests; control of finance by local authorities with the Ministry of Health as a coördinating force chiefly through the allocation of state grants. The first should present no great difficulty. It implies administrative changes far wider in scope than health services; the need for revision of local authority areas has long been widely recognised. The second sounds attractive but might prove to be less happy than its sponsors contemplate, for in the last resort control of the services would remain in the hands of a democratically elected local authority, and experience teaches that even the most democratic of local authorities can prove a sore trial to its health advisers. It is proposed that health services should be financed by insurance, by rates and by Government grants. Extension of benefits on an insurance basis necessarily involves increased premiums which it is suggested should be met partly by additional contributions from workpeople and, in larger measure, by increased contributions from employers. Representatives of both have repeatedly told investigating committees that the limit in these directions has already been reached. Rates, the pamphlet explains, fall heavily on the working man and cannot be raised, so that the main burden must fall on Exchequer grants. If such grants are provided, it seems reasonable to assume that there will be provision for a degree of state supervision and control that the sponsors of the scheme may find irksome.

The committee favours something in the nature of the Highlands and Islands medical service scheme, which has, undoubtedly, been an outstanding success in remote parts of Scotland during the last twenty years. That scheme is administered directly by the Central Health Department. When a vacancy occurs in the service, there are, as a rule, many applicants for appointment to it, with the result that there is a degree of selection of entrant which may not be entirely without significance in appraisal of the success of the scheme. The committee also looks with favour on the state-subsidised health services of the Scandinavian countries and of Russia. These countries have wide variations in health services and in their control. It is true, for instance, that health services in Denmark are good and the vital statistics of the country better than ours, but it must be remembered that the medical curriculum is much longer there than here, and that, while the hospitals are almost entirely financed by public funds, there is a degree of central supervision of them and of appointments to them, as well as of the general work of doctors, that is substantially different from conditions prevailing in this country. British doctors might perhaps regard comparable supervision with some suspicion.

HOW WAR AFFECTED HEALTH SERVICES

There is nothing very new in these general considerations, but the pamphlet in which they are published [1] is invested with topicality by its reference to the disorganisation of health services brought about by the war. Three new factors have affected health services since the war—evacuation; preparation for air-raid casualties; and intensification of the economic crisis.

The evacuation resulted in a redistribution of population which was associated with disorganisation of health services, perhaps stopping short of "the almost complete breakdown of medical care for mothers and children" to which the pamphlet refers. Its authors complain that there was no medical examination before or immediately after evacuation, with the result that special clinics had to be set up in the receiving areas to deal with infections like scabies and pediculosis. To some extent these criticisms are legitimate. But it is only fair to point out that substantial arrangements were made for the medical care of evacuated mothers and children. In many parts of the country maternity homes were improvised, and in some specialist obstetricians were appointed, though in few were these services fully utilised. There was, as the pamphlet states, an arrangement for the remuneration of general practitioners for attendance on unaccompanied evacuated children, though for some

1. War and the Medical Services. London: Labour Research Department, 6, High Holborn, W.C.1. 1940. Pp. 24. 3d.

extraordinary reason there was differentiation between accompanied and unaccompanied children in this respect. It is true that not enough thought was given to medical needs in framing evacuation proposals centrally or locally. The billeting officers entrusted with the local administration of the scheme were, too often, unfamiliar with medical resources and limitations and sometimes even jealous of any medical "interference." Medical officers of health should have been asked to say whether the number of children it was proposed to send to their areas could be reasonably housed in them.

The need for provision of hospital beds for air-raid casualties was—and is—compelling. The central health departments were doubtless given by their fighting-services colleagues an indication of the extent to which it was anticipated that casualties might arise and it was imperative that every attempt should be made to provide the necessary beds. How far steps in this direction should have been taken earlier we are not in a position to judge, nor can we comment on steps taken to create the necessary reserve of surgical equipment, which was as important as any other essential commodity, such as sugar. It is true that there has been a reduction in the number of beds available for civilian sick and that the aim must be to replace these beds as soon as possible, presumably by bringing new hospitals into service, since it is unlikely that the need for holding empty beds will disappear as long as the war continues. On this subject the committee seem to be a little unkind, for they say of the evacuated population that there was difficulty in securing accommodation for acutely sick patients, though in the same districts, buildings converted for use as casualty base hospitals were lying empty, and a little further on "As for the base hospitals, they were just not ready"—which latter was probably the truth.

The crux of the pamphlet lies in its insistence that finance is the root of the trouble and that the stress of war has merely served to emphasise defects already present. That there are such defects is undoubtedly true, but their remedy will not be easy and it is perhaps unfortunate that the committee have waved their broad brush a trifle freely.

A DEPUTATION TO THE MINISTER OF HEALTH

On Jan. 19 a delegation from the Socialist Medical Association presented a memorandum to the Minister of Health broadly covering the same ground as this pamphlet. The delegation pointed out that although the voluntary teaching hospitals are providing only 3·5 per cent. of the casualty beds in the London sectors all the sector officers were appointed on their recommendation and from among their staffs. Municipal hospitals are starved of E.M.S. staff as compared with the voluntary hospitals. The new E.M.S. plan, said the delegation, gives the impression of being prepared for the benefit of the consultants and voluntary hospitals rather than of the patients. They urged that E.M.S. hospitals should serve the civilian sick of their own neighbourhood and of the nearest evacuation area; that all civil hospitals should be controlled by local authorities under the general direction of the Minister; and that immediate steps should be taken to restore to peace-time efficiency the tuberculosis and maternity and child-welfare services. The Minister agreed that there were some unsatisfactory aspects in the present organisation of the health services and promised to investigate the delegation's recommendations.

Miss Florence Horsburgh, M.P., will address a public meeting which the Institute of Hospital Almoners is holding at the Westminster Palace rooms, 44, Victoria Street, London, S.W.1 today, Friday, Feb. 16, at 5 P.M.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

SCOTTISH HEALTH FIGURES

THE annual report of the Registrar-General for Scotland shows that there were fewer deaths in Scotland during 1938 than in any year since 1861. The population of Scotland in 1861 was just over 3,000,000; now it has reached the peak figure of 5,000,000, and in spite of the increase of 2,000,000 the number of deaths in the two years was the same. Since the census of 1931 the population has increased by about 15,000. This is in part attributable to an excess of births over deaths and in part to immigration from overseas. In 1938, however, the credit balance of migration amounted only to a little over 2000. There has been a rise recently in unrecorded emigration, principally to England, although this is believed to have been somewhat less in 1938 than in the immediately previous years. The general death-rate in the infantile and pre-school periods and the mortalities of the principal epidemic diseases all show record low rates. The infantile mortality is now only a half of what it was at the beginning of the century; in the same period pre-school mortality has fallen to less than a third and that for the age-period 5–44 years to about a half. At later ages smaller but still definite reductions are recorded. The number of deaths under one year was 6163, a rate of 69·5 per thousand births, compared with 80·3 for the previous year. Deaths from the principal epidemic diseases numbered 2043, compared with 4468 in the previous year. The most important causes of death in this group were measles and diphtheria. Heart disease accounted for about an eighth, and cerebral hæmorrhage for about a tenth of the total deaths. The general death-rate for 1938 was 12·61 per thousand. This is 1·24 below that for the previous year and 0·71 below the average for the preceding five years.

More marriages were recorded in 1938 than in 1937, and indeed each of the past five years has seen a higher figure. The number of living children registered was rather above the average for the past forty years. Illegitimate births made up 6·15 per cent. of the total births, the lowest rate ever recorded in Scotland. There was a rise in the number of children born to women under twenty years of age. This rise is striking when it is realised that the rate is higher than it was in 1855 when the total birth-rate was almost double the present one. The decline in fertility, however, between the two dates is well-marked in the higher age-periods. Although the population in Scotland is not quite reproducing itself the report explains that it compares favourably in this respect with most other countries in western Europe or the Dominions. Compared with 1855 the 1938 figures show great changes in the size of families. In 1855 first, second and third births accounted for 50·4 per cent. of the total births, while in 1938 these births represented 73·2 per cent. of the total.

A study was made of the times at which births and deaths took place, which is of interest in view of the persistent belief that the majority of births and deaths occur in the small hours of the morning. In the case of deaths no evidence was obtained to justify that these were critical hours. A preliminary analysis of 1747 births in the burgh of Paisley showed, however, that an abnormally high proportion of live-born infants were born in the early hours of the morning, quite an abnormally low proportion in the afternoon and early evening. The maximum is between 3 and 6 A.M. and the minimum between 6 and 9 P.M., the

former being 50 per cent. greater than the latter. The suggestion that the figures may have been distorted by doctors operating to hasten the birth was also examined. But since roughly a third of all deliveries took place in hospital, a third by general practitioners and a third by midwives in the patient's homes the report suggests that that does not provide a satisfactory explanation.

BLOOD FOR TRANSFUSIONS

The administration of the blood-transfusion service in Scotland is to be taken over by a new council of thirty members under the chairmanship of the Earl of Rosebery. The council will coördinate the work of the local voluntary committees in various centres and will appeal to the public for funds. The Department of Health, who have met the cost of the service so far, will continue to do so until the end of this month, and after that will still partially support the service even although the public will be asked to contribute.

HOME HELP FOR INVALIDS

The medical officer of health for Glasgow has been authorised to provide more helpers to assist in the homes of the sick poor who are without any family attendance. The public health department has already organised home assistance for maternity cases and this system is to be extended to chronic invalids who are unlikely to benefit by hospital treatment but lack the necessary attendance at home. It is intended also to increase the amount of nursing attention available in the homes of poor people suffering from pneumonia. There has recently been a high incidence of this condition in the city and additional nurses have been engaged under temporary appointments. These nurses will take part in the domiciliary supervision for the selection of urgent cases for hospital treatment and will look after the patients in their homes prior to their removal to hospital.

HOSPITAL COÖPERATION IN EDINBURGH

At a recent meeting of the officials of the Edinburgh Royal Infirmary figures were given regarding the finances of the new Simpson Memorial Maternity Pavilion. The heavy outlay likely to be entailed in the maintenance of this department has caused grave anxiety. There is a prospect of a recurring annual deficiency of £12,000 which it will be hopeless to face without some means of easing the burden, and it is felt that the deficiency cannot remain as a charge on the general hospital funds. The contributors hope that at the consultations between the Infirmary authorities and the town hall the whole situation of maternity services in the city will be reviewed. In 1925 the Hospital Services (Scotland) Committee expressed the opinion that local authorities in their schemes of maternity service and child welfare might reasonably be expected to provide a proportion, if not all, of the costs of maternity services. At the Infirmary meeting it was said that the position is most unsatisfactory. They had held out the hand of friendship to the town council over and over again but it was difficult to overcome the legal obligations which were imposed—for one, the payment of fees in municipal hospitals. However, they were working together as much as could be expected when they were both under the heel of the Department of Health. The other point of view has been expressed by the public health committee of the town council. Here it was stated that the committee had time and again approached the Infirmary on many questions. A consultative council with a constitution was suggested by the town council and the details drawn up by the town clerk but it was rejected by the Infirmary. The voluntary hospitals were then asked to draw up a scheme but none had been produced. One major difficulty militating against closer coöperation between the two institutions is the fact that while the Infirmary levies no charge on any patient there is a basic statutory charge of 25*s*. a week at the municipal hospital. So far it has been impossible for the two hospital systems to achieve a uniform policy in this direction.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE DUBLIN HOSPITAL PROBLEM

THERE has been a good deal of discussion in the public press about the health of Dublin, particularly about the delays in the development of the hospital system which was decided on a couple of years ago. Much of this criticism has come from irresponsible people, and however one may sympathise with their aims their methods of working for them has tended to make coöperation difficult. Some of the critics, however, are of a different class and have a clear knowledge of what is required. Among these Prof. Henry Moore, one of the physicians to the Mater Misericordiæ hospital, has on several occasions been severe in his strictures on the lack of progress in hospital development, for which he blames the Department of Local Government and Public Health. In a public speech a few weeks ago he returned to the attack in more severe terms than before, and the department has been roused to make a lengthy defence in a communication made to the daily press of Jan. 27. It is able to show that many of the delays have been unavoidable, and that for some of the others the hospitals could not divest themselves of all responsibility. The department, however, fails to realise the position of the hospitals in making plans which will govern their entire future. For example, in the case of three hospitals the amalgamation of which is proposed as part of the general scheme it was necessary for the joint committee to refer every fresh point that arose to the governing bodies of the three before decisions could be made, and the process was inevitably a lengthy one.

The tone of the communication from the department, like much of the criticism which evoked it, is unfortunate and lacking in the patience which one has a right to expect from a government department in carrying through a notable reform. It is clear, nevertheless, that substantial agreement has been reached on the main points of the general scheme of development, and we may assume therefrom that controversy and recriminations on points now decided, wherever they come from, do not promote but rather impede progress. A great deal could be said on both sides, but the less of it that is said the better. There does not seem to be any justification for the suggestion, implied rather than expressed, that the voluntary hospitals and their medical staffs have not given the coöperation which the government had a right to expect. Still less is there justification for the explicit threat that the Minister may reconsider his decision to provide for the development of the voluntary hospitals as promised two years ago, and fall back on a proposal, then rejected as inferior, of establishing a municipal hospital as an alternative. The voluntary hospitals and their staffs have no object but to provide the best hospital service possible, and this is also the object of the Minister, and it is a pity that frayed tempers, whether of responsible or irresponsible parties, should be allowed to hamper the progress toward this end.

MEDICINE AND THE LAW

Income-tax on Hospital Gift

WELL-KNOWN ways and means have been lawfully devised whereby relief from income can be obtained in the course of subscribing to hospital funds. It is to be hoped that the Treasury's intensive search for revenue will not threaten this relief, which benefits the charitable object as well as the subscriber. Walsh *v.* Randall (H.M. inspector of taxes), a revenue case heard by Mr. Justice Wrottesley recently, illustrates the added burden which taxation can impose upon generosity. In 1934 a benefactor decided to give £10,000 to an English county hospital. He gave the money in a lump sum, without recourse to the device of annual subscriptions under covenant or otherwise. He simply handed his cheque to the proper person who received it on behalf of the hospital. The donor was a partner, though not an active one, in a business carried on in India. His income from that source was allowed to accumulate overseas and was applied to the purchase of Indian government stock. Out of the total of £10,000, it seems, £7800 came from accumulated income thus invested. The exact date of the gift to the hospital does not clearly appear in the reports of the case at present available. But it is clear that the donor and the Inland Revenue were presently in dispute over an assessment to Schedule D income-tax for the financial year 1936 in respect of the £7800. He maintained that it was capital; the Inland Revenue maintained that it was income and liable to tax. The judge decided in favour of the Inland Revenue; the donor, he said, had treated the money as income by going out of his way to keep control of it until the last moment.

Without fuller knowledge of the facts it is hard for laymen to be persuaded that what might popularly be called savings must not be deemed capital. They can but compliment the Inland Revenue upon its alertness in pouncing upon a sum which presumably was out of reach so long as the fund remained in India. Passages in Mr. Justice Wrottesley's judgment seem to hint that the donor might have had to pay the £10,000 only (and not £10,000 plus a considerable sum for income tax), had he taken the advice of the experts who know how tax can legitimately be avoided. If that be so, the hospital and not the Inland Revenue might have had the benefit of the extra amount which now must go in payment of the tax. Grateful for such benevolence, hospitals must hope that benefactors will bear this consideration in mind.

RUMANIA

(FROM OUR OWN CORRESPONDENT)

LEGAL ABORTION

A SCHEME of indications and contra-indications for the induction of abortion, proposed by Dr. Kernbach, professor of forensic medicine in the university of Cluj, has been adopted by the medical and legal authorities in Rumania. Abortion is advocated for mothers with exudative caseous pulmonary tuberculosis but not for those with latent fibrous tuberculosis in whom no tubercle bacilli can be found. As regards heart disease, especially mitral stenosis, abortion is contra-indicated so long as there is efficient compensation; but, if compensation fails, no time should be wasted in experiments with drugs, and gestation should be interrupted immediately. In acute renal disease abortion is indicated only in the presence of œdema and hypertension, and in chronic renal disease only if uræmia is imminent, if secondary cardiac disease supervenes with œdema and hypertension or if renal insufficiency is causing symptoms. Pyelitis and pyelonephritis are not indications for abortion unless the infection becomes general. In unilateral renal tuberculosis abortion is indicated if the disease is not eliminated after ablation of the affected kidney. Tuberculosis and tumours of the urinary bladder, disease of the alimentary canal and of the gall-bladder, serious jaundice if aggravated by pregnancy, rapidly spreading cancer, exophthalmic goitre, pernicious anæmia, purpura, thrombopenia, hæmorrhagic diathesis, tuberculosis of bone (especially of the spine), all hereditary mental diseases (sterilisation being illegal in Rumania), and laryngeal tuberculosis are absolute indications for abortion. Gestation should also be interrupted in diabetes unsuccessfully treated with insulin; in parkinsonism and other postencephalitic conditions, retinitis gravidarum, detachment of the retina, and bilateral optic neuritis, if aggravated by pregnancy; and toxic labyrinthitis when deafness is complete on one side and there is a threat of extension to the other side owing to pregnancy toxæmia.

CAMPAIGN AGAINST MALARIA

In an attempt to rid the Black Sea littoral of malaria many gambusiæ—freshwater fish which feed on anopheline larvæ—have been imported from Italy and America and distributed in swamps, lakes, and streams on that coast and at the mouth of the Danube with beneficial results. On some of the lakes paraffin is being used as an alternative method.

FOOTBALLERS' CERTIFICATES OF FITNESS

A committee was appointed last year to supervise the physical condition of footballers and to restrict the game to well-developed athletes. It is now the duty of all football leagues to see that their members undergo periodical medical examinations and obtain certificates of fitness. No footballer can play in a public match without such a certificate. At the medical examination attention is chiefly paid to heart, lungs and sight, and to the question of whether there is hernia, undescended testicle, or any other bodily defect.

The Lancet 100 Years Ago

Feb. 15, 1840, *p.* 760.

From a letter.

The First Report of the Registrar-General for Births, Deaths, and Marriages, addressed to Lord John Russell as Secretary of State for the Home Department, has just been published. To all those who are fond of such subjects it will well repay the perusal. For the greater convenience of arrangement the whole of England is divided into 25 divisions. In looking to the return of deaths, I find some most remarkable coincidences. I find almost invariably that more people die at the ages of 30, 40, 50, 60, and 70 than either in the year before, or the year after; if we take the middle period of 50, it is entirely so, and the following numbers for the whole of England,

Died at	49	years	of	age	915
,,	50	,,	,,	.. ..	1454
,,	51	,,	,,	.. ..	816

Thus showing that at 50 years of age almost as many males died as at 49 and 51 together. I have only extracted the Table for males, but I have no doubt a similar result would be shown for females. These results will open a large field for medical and surgical inquiry, as I believe the facts which are now exhibited have entirely escaped our researches. We have sometimes heard that 45 and 50 are ticklish ages, but such an almost uniform result as the present, I believe, has never been dreamt of.

PUBLIC HEALTH

Vaccination Lymph

THE introduction of glycerinated calf lymph at the end of last century marked an immense stride forward in smallpox prophylaxis, but it would be unwise to assume that this form of vaccine could not be improved on. Useful though it has been calf lymph, as at present produced, is not without certain disadvantages. Principal amongst these is the high bacterial content of the green lymph, necessitating a long period of treatment with glycerol before it is safe for use. Vaccinia virus has been more studied than most of the so-called filtrable viruses and yet it was only comparatively recently that the filtrability of this virus was conclusively demonstrated. For long this matter was in dispute, but in 1929 Yaoi and Kasai [1] showed that vaccinia virus would pass through Berkefeld V candles, a fact which was later confirmed by Green and Eagles.[2]

This finding, together with the demonstration that it could easily be cultivated outside the body, either in chick-embryo tyrode medium (Rivers[3]) or on the chorio-allantoic membrane of developing hens eggs (Goodpasture, Woodruff and Buddingh [4]), opened the way to new methods for the preparation of vaccinia virus for the vaccination of man. Culture virus has, in fact, been employed for this purpose in various parts of the world (Rivers,[3] Rivers and Ward,[5] Stevenson and Butler,[6] Goodpasture and Buddingh [7]). It has been found to produce quite satisfactory takes with no untoward result, though Rivers has drawn attention to the fact that vaccinia virus grown in chick-embryo tyrode medium loses virulence if maintained for too long in such an environment. Goodpasture and Buddingh vaccinated a considerable number of individuals with egg-grown virus by the method of scarification and found that a satisfactory immunity developed, but Rivers, Ward and Baird [8] were disappointed by the low degree of immunity which resulted from the intracutaneous injection of tissue-culture virus. The object of Rivers and his colleagues was to vaccinate without vesicle production, so avoiding the development of scars. Of 331 children vaccinated in this way, and tested for immunity by scarification with calf lymph after an interval varying from one month to three years, only 25 per cent. were found to be immune. This doubt as to the immunising property of tissue-culture virus finds support in the more recent work of Donnally [9] who revaccinated 36 children some two to three years after primary vaccination in infancy with cultured virus, comparing the results with those obtained in 34 children whose primary vaccination had been made with calf lymph. Revaccination was carried out with calf lymph inserted cutaneously by the multiple-puncture method of Leake; only 2 of the children successfully vaccinated with culture virus proved to be immune, whereas 25 of the 32 children originally vaccinated with calf lymph were found to possess a good degree of immunity.

A recent paper by R. G. Henderson and D. McClean [10] carries us a stage further. They made use of a filtered suspension of vaccinia virus prepared in the following manner.

The crude pulp obtained from inoculated sheep was suspended in distilled water and the bulk of extraneous protein precipitated by the addition of citric acid and removed by centrifugation. The clarified supernatant fluid was neutralised, 1 per cent. Difco Proteose Peptone and 0·43 per cent. sodium chloride were then added and the suspension filtered through a Berkefeld V candle. Suspensions so prepared produced definite lesions in the rabbit's skin when diluted 1 in 100,000.

The first group of individuals vaccinated with these suspensions consisted of 131 adults. They were given the suspension intradermally, the dose varying from 0·2 c.cm. of a 1 in 1000 dilution to 0·2 c.cm. diluted 1 in 100,000; no untoward results occurred although, contrary to expectation, vesicles developed in a considerable percentage. Since, however, only 14 of this group had not been previously vaccinated no conclusions could be drawn as to the immunising efficacy of this procedure. The second group of 107 children had not received previous vaccination; 84 of these children were revaccinated with calf lymph some six weeks after intracutaneous vaccination and only 57 were found to be immune. A further experiment was then made on a group of 68 children. These were divided into three groups: 23 received the suspension intracutaneously, 24 were vaccinated by scarification with the same suspension, and the remainder were vaccinated in the orthodox manner with calf lymph. When subsequently tested for immunity by revaccination with calf lymph all in the last group and all but one in the second group were found to be immune, whilst 4 out of the 24 receiving the virus intracutaneously were fully susceptible. Finally it was shown that subcutaneous injection of this vaccinial suspension was no more effective in evoking immunity.

Henderson and McClean draw attention to certain points of particular interest emerging from their experiments. They had thought that, with such a bacteria-free suspension of vaccinia virus given by the intracutaneous route, not only would accurate dosage be possible, but vesicle formation and subsequent scarring would be eliminated. The latter hope was not fulfilled, for quite a large percentage of the individuals so vaccinated developed vesicles. What was of greater interest, however, was the close association between vesicle formation and the development of immunity. Out of 75 children reacting to intracutaneous or subcutaneous vaccination with vesicle formation only 3 were not completely immune to revaccination, whereas 58 out of 89 not developing vesicles reacted normally when revaccinated. Whilst unable to offer any satisfactory explanation of this fact, it may well be, as these authors suggest, that it is bound up with the highly developed epidermotropic affinities of the strain of vaccinia they used. Given to man in such a way as to avoid epidermal lesions, this strain possibly would not multiply sufficiently or reach that antigenic maturity necessary for the development of immunity.

Further work will obviously be necessary for a correct interpretation of this important phenomenon. In the meantime one practical conclusion can be drawn from recent work on smallpox prophylaxis. Until we know more about the immunising properties of culture virus and the efficacy of routes other than the cutaneous it would be well when immunising man against smallpox to adhere to the established method of vaccinating with calf lymph by scarification.

1. *Jap. J. exp. Med.* 1929, **7**, 243, 389, 579.
2. *Brit. J. exp. Path.* 1931, **12**, 202.
3. *J. exp. Med.* 1931, **54**, 453.
4. *Amer. J. Path.* 1932, **8**, 271. 5. *Ibid*, 1935, **62**, 549.
6. *Lancet*, 1933, **2**, 228. 7. *Amer. J. Hyg.* 1935, **21**, 319.
8. *J. exp. Med.* 1939, **58**, 635.
9. *J. Amer. med. Ass.* 1939, **111**, 1796.
10. *J. Hyg., Camb.* 1939, **39**, 680.

Points from Annual Reports

Dr. J. F. Galloway devotes much of his report for *Dewsbury* to action taken under the Housing Acts. At the end of 1938 the borough contained 52,860 inhabitants living in 16,628 houses. A table of clearance areas and unfit individual houses shows 1543 houses in the clearance areas, 507 individual houses demolished and 210 closed—a total of 2260 houses, more than an eighth of the houses in the borough. Good progress had been made in this costly work of rehousing since 1934, but much still remains to be done, for in common with many towns in the industrial districts of Britain Dewsbury needed to be rebuilt in large part. It is disheartening that the gallant attempt to pursue this formidable but necessary reformation should be hung up indefinitely by another war. In Dewsbury, as in so many towns in the country, midwifery has become almost entirely a municipal function: "In 1938 in nine out of ten babies born the mother had availed herself of services provided by the council." But home nursing is entirely in the hands of a nursing association totally independent of, and apparently unhelped by, the town council.

The borough of *Bedford* is growing, chiefly by immigration from areas where there is more unemployment. The estimated population for mid-1938 is given by the Registrar-General as 45,760, an increase of 510 over that of the preceding year. Dr. G. K. Bowes maintains that this population figure is too low by about 5000. The birth-rate in 1938 was 14·4, a full point above that of 1937, and the crude death-rate 12·1 against 11·8. The comparability factor for Bedford is 0·88, but as the immigrants are mainly newly-married people this factor has probably become obsolete. Bedford has a scheme for antenatal and postnatal supervision by private practitioners limited to "insured women and to any uninsured woman whose family income does not exceed £250 a year." This raises the question whether benefits given under the Public Health Acts can be made subject to an income limit. For the second year in succession there was no maternal mortality in Bedford (674 births). The average maternal mortality for the past ten years was 3·44 per 1000 live births. An outbreak of Sonne dysentery traced to milk occurred in January. In 59 households 96 out of a total of 224 persons fell sick. The Sonne bacterium was recovered from some of their fæces and also from the suspected milk.

Dr. Malcolm E. Barker in his report on *East Ham* writes: "Much attention has been paid to the need for admission to hospital of children suffering from measles, whooping-cough, and bronchopneumonia. . . . A period of convalescent treatment is essential if full restoration is to be obtained." Modern medical opinion is insistent on the importance of convalescent accommodation for cases of serious disease treated in acute hospitals, but for no diseases is it more important than measles and whooping-cough, especially in city children. The direct mortality of these is comparatively small, but the permanent ill health resulting from them is great, most of which can be abolished by a few weeks' comfortable convalescence.

Hornsey has a voluntary Home Helps Society, and Dr. R. P. Garrow describes the work it has done during its nine years' existence. The service has grown from 3 home helps serving 4 mothers in 1930 to 12 helps serving 136 mothers in 1938. In 1938 its income was £566 and expenditure £502. We are not told how much of the income was recovered from those using the service, but as the council decided to make a grant of £200 towards the expenses of the society for the year ending March 31, 1939, we may presume that the amount recovered from the mothers fell short of the expenditure by at least this amount. The provision of home helps is designed mainly to help mothers of large families who are unable to leave home for their confinements and is not expected to be self-supporting. The provision is little used and information of its working and finance is consequently scanty. The three adjuncts to the maternity services —home helps, free milk and dentistry—were made permissible under the Maternity and Child Welfare Act of 1918, and the last two must be provided by all local authorities, but in few districts are they as fully developed as they are in Hornsey.

Dr. W. M. Ash of *Derbyshire* gives a table of the mortality-rates of the seven principal zymotic diseases in the county since 1891, contrasted with those of England and Wales. Generally those of the county are slightly lower, but the differences are slight. Thus the total mortality fell in Derbyshire from 1·87 to 0·238 and in England and Wales from 2·14 to 0·23. The mortalities from all seven diseases except diphtheria have fallen to between a tenth and a thirtieth of those at the end of the last century, but the fall in diphtheria mortality has only been from 0·17 to 0·139. It is bitterly disappointing that the only infectious disease for which we possess a theoretically perfect treatment and an almost perfect prevention should maintain its mortality almost unimpaired. Dr. Ash's table of the incidence of deaths from cancer since 1916 shows that in spite of the increase of population the numbers of deaths from cancer (including sarcoma) have remained about constant for all ages up to 45. At ages over 65 the increase of cancer deaths in males is about 150 per cent. and in females slightly over 100 per cent.

The county borough of *Huddersfield*, which has a fair claim to be the birthplace of national child welfare, is unique amongst British local health units in having a system of voluntary notification of pregnancy introduced in 1916 when Dr. S. G. Moore was medical officer of health. Its use has grown from 11·2 per cent. of all fertile pregnancies in 1916 to 88·2 per cent. in 1938. Over 90 per cent of all expectant mothers receive antenatal supervision. Dr. John M. Gibson records that in 1938 the total number of births in the borough was 1851, of which 1322 took place in institutions. Maternal mortality is generally somewhat high in Huddersfield, and in 1938 it was 4·32 per 1000 births registered. Five deaths were due to sepsis. Dr. Gibson refers to the use of sulphanilamide, by which "definitely favourable results have been obtained locally, as elsewhere," but in some cases it fails, for none of the five fatal cases responded to the treatment. Dr. Gibson tells us that the downward curve in infantile mortality has been interrupted and during the past three years has shown a tendency to rise. More than half of the deaths of infants occur during the first week of life and "must be attributed to causes which operate either at, or prior to, confinement." Dr. Gibson associates this with the fall in the birth-rate, which is neither accidental nor natural but due to deliberate limitation of families "by the use of methods which, although successful generally in preventing conception, may in some cases result in abortion or in premature birth." There are strong suspicions, though at present we cannot say more, that contraceptives and, still more, unsuccessful attempts to produce abortion may damage the embryo without destroying it in utero, and that the persistent high neonatal mortality and the apparent increase in malformations are due to this cause. For many years the birth-rate in Huddersfield

has been lower than the death-rate, suggesting that in that borough birth control is more prevalent than elsewhere, but in 1938 the birth-rate was 14·13, the highest since 1925 and the death-rate 13·12, the lowest (except 12·74 in 1932) since 1926.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 20, 1940

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 1 (Southampton Port[1]); scarlet fever, 1148; whooping-cough, 689; diphtheria, 789; enteric fever, 7; measles (excluding rubella), 2700; pneumonia (primary or influenzal), 1728; puerperal pyrexia, 921; cerebrospinal fever, 142; poliomyelitis, 4; polioencephalitis, 1; encephalitis lethargica, 2; dysentery, 49; ophthalmia neonatorum, 73. No case of cholera, plague or typhus fever was notified during the week.

To the 142 cases of cerebrospinal fever Kent contributed 6; Lancaster 16 (4 in Manchester); Leicestershire 11 (8 in Leicester); the County of London 5 (1 each in Kensington, Lambeth, Poplar, Stoke Newington, and Wandsworth); the County of Southampton 9 (5 in Portsmouth); Staffordshire 5; Surrey 13 (4 in Guildford); Warwickshire 5 (4 in Birmingham); and Glamorgan 14 (4 at Rhondda).

1. We understand that in the case notified last week from Hailsham R.D. the diagnosis of smallpox has been cancelled in favour of papular urticaria.

Deaths.—In 126 great towns, including London, there was no death from small-pox or enteric fever, 3 (1) from measles, 3 (0) from scarlet fever, 5 (0) from whooping-cough, 19 (0) from diphtheria, 35 (4) from diarrhœa and enteritis under 2 years, and 291 (29) from influenza. The figures in parentheses are those for London itself.

Liverpool, South Shields, and Plymouth each reported 3 deaths from diphtheria. There were 4 fatal cases of diarrhœa at Birmingham, and 3 each at Edmonton and Sheffield.

Of the 262 deaths from influenza outside London 38 were reported from the south-eastern area (Bournemouth 5); 133 from the northern area (Manchester 28, Liverpool 11, Leeds 10, Hull 9, Sheffield 7, Blackpool and Salford each 6); 49 from the midland area (Birmingham 12, Bristol and Nottingham 6); 7 from the eastern area (Lincoln 5); 2 from the south-western area; 13 from Wales (Cardiff 7).

Addendum.—In the return for Jan. 27, which reaches us as we go to press, the notifications of cerebrospinal fever have risen from 142 to 190, scattered as before evenly over the whole country. Deaths attributed to influenza have risen to 417 (46), and of the 371 cases outside London the northern area accounts for 182, and the midland area for 72. Highest individual figures are Manchester 30, Liverpool 16, Leeds, Birmingham and Nottingham each 15, Hull and Bristol each 10. In the Scottish return for the same week Glasgow reports 88 deaths.

IN ENGLAND NOW

A running commentary from our Peripatetic Correspondents

DURING the cold spell we were frozen up for over a fortnight. The water-main froze cutting off all supplies. The tankful was all we had and we watched the diminishing supply wondering when it would give out and the boiler explode. When I mentioned that I had not had a bath for ten days to a senior member at the club he laughed and said "That's nothing, I have been six weeks without one in the desert." But it *is* something, for the desert is not a frozen house; you can stand up and get a sun and air bath. Here the most one can do is a gas-fire and bit-of-brown-paper bath. This last is my own invention, as the White Knight said. You select a piece of brown paper of moderate size and medium quality, so that there is some but not too much roughness in it—the wrapper of THE LANCET serves excellently—and with it you rub yourself all over, retaining your small ration of water for the more necessary flexures and for shaving. It is surprising how much grime comes off in this way and how refreshed you feel. I have been comparing the minimal amount that we use now with the ration we had out in Palestine which was half a gallon per man. I cannot perform the irreducible amount of washing and shave on a quart. I think the army authorities must have been generous over our allowance except on one or two isolated days when we drank it all.

By the Friday the tank was almost empty and we were cadging bucketfuls from our more fortunate neighbours. Then we learnt two things: first, that our boiler would not burst—its pipes are so arranged that it remains full—and second, that if you asked the M.W.B. they were bound to supply you out of a stand-pipe in the roadway. And so on the Saturday the missis and Mary the maid filled all available buckets, jugs and receptacles as well as the bath and took one or two buckets up to the tank, finding no difficulty in carrying them through the trap-door. Then we made preparations for a bath. The staff work was carefully thought out on Saturday night. I was to get up early and make a cup of tea, then we were to carry the water from the bath to the tank. By that time Mary would have made up the stove, and when the water was hot we should let it back again into the bath. I woke at 4.30 A.M. and started thinking of it. I thought the tank held 400 gallons and the garden watering-can 2½. I came to the conclusion I should have to walk up the attic ladder 160 times, and the thought prevented me sleeping again. At 6 A.M. she who must be obeyed awoke—she swore I woke her by laughing—and called me. I jumped out of bed and having put on the kettle and some old clothes, started to get ready to carry up the water. There were many preparations she wanted to make, being quite convinced I should make a mess of it. "What are you going to take the water out of the bath with?" "How are you going to wipe the bucket to prevent it dripping?" "You had better put them down on that mat that you have in your room when you are shaving." And there were lots of things I found to do, too. Between them they took me an hour; then I had to listen to the news. Then a dozen more little things came into my mind. Then, having been reading Freud, I realised it was my old subconscious that was stopping me. I loathed doing the job, and was also rather afraid of it because I knew I should make a mess because she was so certain I should.

I faced my subconscious and told him to clear out, I also persuaded her to stay in bed assuring her I could do it by myself. The staff work had been excellent, but for one thing. I am about a foot wider than she and so when I reached the trap-door my left hand, in which I was carrying the bucket, was at least six inches nearer the margin of the opening than hers had been. Bang went the edge of the pail against the woodwork and about half a gallon of water was spilt on the landing, on the wall and trickling down the paper. She shot out of bed like a bullet, and the expression in the curve of her back as she mopped it up in her nightgown showed me my stock was so low that I nearly went back to bed. But I had another try and this time got through the trapdoor without an accident, and together we soon had enough water in the tank for a bath, leaving enough cold

in the bath to cool the hot. I got it second-hand, and as I formally soaped and scrubbed myself I knew that though I had not had a bath for ten days I did not want this one, such is the force of habit. However, for very shame I kept this to myself until I found that she had had the same reaction.

* * *

I live in a part of England which has perhaps partaken of a life of civilisation longer than most of her shires, for long before the Romans landed—and this was the seat of their earliest colonisation—there is good evidence that there was in these parts a highly civilised community, with roads and towns, well-developed trade-routes and, it is probable, overseas commerce. What a mere episode therefore in the life of such a countryside is a war, however long it may last! For close on three hundred years it has not known war at first-hand, and even then the ordinary life of the country ran side by side with the partisan efforts of the cavaliers and roundheads. But now after the first few days of excitement it has settled back, almost one could imagine with a grunt of relief, to its accustomed routine—the weather, the ploughing, the prices of cattle, the thousand petty details of agricultural life which make up its continued existence, and have done so this thousand years. When you meet your neighbours the talk will not run on the war, unless there is some special reason for it to take that direction. No: question and answer, comment and prophecy, will all be about the immemorial subjects of the land and its products. And yet perhaps I am deceiving myself, for though the war is thus certainly at present less important to this community than its immemorial traditions, yet if one looks around at the monuments and relics of the departed families which once held sway round here one is forced to recognise that a long war does materially influence such a countryside, mainly by the failure of the old families and the introduction of the new, a process always resented by the countryside and always accelerated by the incidence of a major war. It is obviously by such biological variations that change, if it comes at all, must come very slowly; and the persistence of type, both physical and mental, through all these many centuries becomes more easy to understand. This war, too, will pass and it will leave its mark deep in our history, but it will leave no deep mark in the long traditions of this countryside. It will vanish, as the other wars have done, and the life of the wood and valley and plain will go on as before.

* * *

At last I have found what I have long been looking for—the now tattered yellow paper-backed copy of "Vie des Martyrs, 1914–1916" which I originally bought at Maloine's bookshop in the medical students' quarter when I had a few days' leave in Paris in early 1918. It is by Georges Duhamel, the Duhamel of the more recent "Pasquier Chronicles." In those days he was a junior surgeon attached to an operating unit in a French casualty clearing hospital; and in this collection of simple stories he brings to life again so many of the poilus who came under his care. I do not know if it was ever translated into English, or much read outside France; I notice from my copy that it had already gone into its 18th printing. It is a fine "war book," true in spirit and sentiment, and quite free from the self-consciously brutal sensationalism of some popular war stories. I have just re-read it with much enjoyment, all the more so because Duhamel is "one of us," a member of our craft, and what he tells is not at all foreign to our own experience. You might, for example, divide all patients into the two categories represented by Carré and Lerondeau.

"Carré, déjà, m'enveloppe d'un regard affectueux et profond. Il me dit :

— Il faut faire tout ce qu'il faut.

Lerondeau ne sait encore que chanter une phrase à peine articulée :

— Faut pas me faire de mal ! "

There is a terrible, heart-stirring account of the battle of Verdun, seen through the medium of his hospital. They had to move up without rest or halt, to take over a hospital of wooden pavilions well inside range of the shell-fire. When they arrived they were greeted by a confrère who told them that already there was a month's surgical work awaiting them. Duhamel opened a door and passed through a hut full of men lying on stretchers on the floor.

"Je me sentais à tout instant agrippé par ma capote, et une voix me disait :

— Je suis ici depuis quatre jours ! Faites mon pansement, je vous en supplie.

Et comme je répondais que j'allais revenir tout de suite, l'homme se mettait à pleurer :

— Ils disent tous qu'ils vont revenir, et ils ne reviennent jamais. . . . . "

But gradually they managed to bring some order out of that hell.

Gautreau and his own particular surgeon I had not forgotten even after these twenty-odd years. Gautreau was a great hefty peasant whose bones were so thick that though a shell had hit his skull, it had made only a bit of a crack. He arrived at the casualty station on foot, sat on a chair in the corner and announced "No hurry; it's only a bit of a scratch." They gave him a cup of tea with rum in it, and he then walked into the operating theatre.

"Le père Boussin sonda la plaie et sentit l'os fêlé. C'était un vieux chirurgien qui avait ses idées sur la douleur et le courage. Il décida :

— Je suis pressé ; tu es un homme. J'ai quelque petite chose à te faire. Tu vas t'agenouiller là et ne pas bouger.

Quelques minutes après, Gautreau était à genoux, cramponné au pied de la table. Il avait la tête couverte de linges sanglants, et le père Boussin, ciseau en main, lui frappait sur la crâne, à petits coups de maillet, comme un sculpteur. Gautreau disait :

— Monsieur Bassin, Monsieur Bassin, vous me faites mal.

— C'est pas Bassin, c'est Boussin, répondait calmement le vieil homme.

— Possible que c'est Boussin. . . . .

Un silence suivait, et Gautreau d'ajouter soudain :

— Monsieur Bassin, ça tue ce que vous bricolez à !

— Pas de danger !

— Monsieur Bassin, je vous dis que ça tue !

— Encore une seconde !

— Monsieur Bassin, vous m'enfoncez des clous dans la tête, c'est pas bien. . . .

— C'est presque fini.

— Monsieur Bassin, j'en ai assez !

— C'est justement fini, dit le praticien en posant ses instruments.

Gautreau eut la tête empaquetée dans du coton et sortit de la salle.

— N'est pas méchant le vieux, dit-il en riant ; mais frapper comme ça, avec un marteau . . . . C'est pas que ça fait mal . . . ça fait pas grand'chose comme mal. Mais ça tue, j'connais ça ! ça tue, et c'est des histoires que j'veux pas."

". . . Contrary to popular expectation the child coming from an ideal home giving him emotional security and ordered comfort has found it easier to settle, even in an indifferent billet, than the child from an indifferent home."—EDNA M. HENSHAW, *Mental Health*, January, 1940, p. 5.

PARLIAMENT

ON THE FLOOR OF THE HOUSE

By MEDICUS, M.P.

WITH the announcement of the Government scheme for keeping down the price of certain foods by subsidy and the fixing of the date for the beginning of meat rationing on March 11 the economic organisation of the nation passed a definite stage of development. The debate on Feb. 8, nominally on Food Prices but actually trenching on the bigger background problems of war production and consumption, covered these developments and foreshadowed others. Economic policy is all-important in a total war because the support and supply of the fighting forces cannot be economically separated from the production and supply services in industry. And neither fighting services nor industry can exist without the national organisation of ordinary civil life behind them. Our lives are being planned now as they have never been planned before. Rationing of food, nation-wide organisation of labour forces and rates of wages, national saving schemes, which may possibly become compulsory, scaling down and restriction of expenditure of all classes of the population, heavy taxation—these are the skeletal structures of a newly developing form of British life.

The debate on Food Prices was primarily concerned with the meaning of the Government's subsidies of about £1,000,000 a week to keep down the prices of bread, flour, milk, meat and bacon. The object of these subsidies is to prevent the cost of living rising, so giving rise to a demand for increased wages—the "vicious spiral" towards inflation which has been so much talked of by politicians, chairmen of the big banks, economists like Mr. Keynes and innumerable newspaper paragraphists and correspondents. But the vicious spiral is not to be avoided by appeals by the Government to the working classes for "equality of sacrifice" and the keeping down of wages. No-one except the Blimps of the backwoods Peers clubs expects that. The Labour Party view in the debate was put by Mr. A. V. Alexander of the Coöperative Society movement, who has the great initial advantage in such discussions of being intimately concerned with the management of a great distributive business, perhaps the largest in the country. As Mr. Alexander said, the Chancellor's policy "should go hand in hand with rationing," by which he appeared to imply rationing of a very sweeping character. Rationing should have a positive as well as a negative side, said Mr. Kingsley Griffith for the Liberals. Rationing to the soldier means adequate supplies; rationing to the civilian means restriction to quantities which may or may not be adequate but which while obtainable are not always obtained. Butter and bacon are not bought by very large numbers of the population up to the rationed amounts because they are too dear. Milk, which is not rationed and which it is not proposed to ration, is not bought in (medically) adequate amounts for the same reason. The only food which is probably always adequately consumed (with minor exceptions) is bread, and this will not be rationed nor was it rationed in the last war.

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What has not yet been sufficiently considered is the safeguarding of the nutrition of the mass of the people and especially of that number, round about 10 per cent., who represent in peace-time the poorest homes. From these homes come the 10·8 per cent. of children classified as "slightly subnormal in nutrition" shown in the report on "The Health of the School Child" as also the 0·5 per cent. whose nutrition is definitely bad. If the nutrition of this 10 per cent. of the worst circumstanced of the population is not improved then there is at least a 10 per cent. wastage of child life. And it is from this bottom 10 per cent. stratum of our population that a large proportion of sickness comes and which provides a culture medium ready to propagate epidemic diseases. The world epidemics at the end of the "other war" of 1914–18 were certainly conditioned by the low nutritional level to which large numbers of the world population had fallen. No-one who saw with his own eyes the condition of the children and the adult population in Austria, Hungary, Poland, and Russia in 1919 and for some years afterwards is ever able to forget it. Conditions as bad as those in Eastern Europe did not affect this country, but there were of course serious effects of war conditions including protective food deficiencies here as elsewhere. This aspect of the matter is not escaping Government attention altogether but it is not receiving enough attention. Protection against financial inflation receives the meed of public discussion which it requires, but the same cannot be said of protection against a drastic lowering of standards of living among our people. A complete economic organisation to which we are moving must include the protection of living and health standards. This is especially necessary in this war because no-one knows how long it will last or whether it will tail off into a condition of economic deprivation much more serious than that which arose in 1918.

The rise in food prices which the Government are now trying to hold in check has already taken prices a long way from their levels in August 1939. The rise in price of all goods considered together is 18 per cent., of cereals and meat 28 per cent., and of other foods 32 per cent. These are steeper rises than in the first three months of the last war. Individual food price increases are sugar from 2½*d.* a lb. to 4½*d.*, butter from 10½*d.* to 1*s.* up to 1*s.* 7*d.*, and the cheapest cuts of imported meats from 4*d.* to 8*d.*; and there have been increases in bacon, oatmeal and in fact in nearly all foods.

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To secure that "equality of sacrifice" which is honestly desired by the large majority of the population the equality must start with the possibility of the bulk of the working population being able to buy at prevailing prices the foods which are necessary for proper nutrition. And the same considerations apply to other commodities such as clothing and fire, light and heat. The way out of the difficulties may be by an extension of rationing to many articles, including clothing, and an extension of the savings movement to compulsory saving on the basis of a proportion of income over a basic figure required for necessities. Sir John Simon, who never overstates a case, spoke of the need for all to recognise "that we shall carry through this tremendous struggle to a successful issue only if every kind of person, other than the poorest of the poor, will recognise that there must be for the time being a certain reduction of standards."

The psychological aspect of this problem is of equal importance with the economic. Mr. Aneurin Bevan who has just, perhaps only just, returned to the Labour fold after an excursion to the extreme left

with Sir Stafford Cripps, put this simply. "The proposition that steel-workers, miners and engineers shall subsist upon this restricted margin of commodities, surrounded by the spectacle of war profiteers being able to buy goods at highly inflated prices, but still able to buy them, will never be accepted by the organised industrialists of this country . . . we cannot restrict the working section of the population to the misery of an iron ration." Mr. Garro-Jones, who was formerly a Liberal and has played many parts, having served in the last war, been private secretary to Sir Hamar Greenwood when he was Chief Secretary for Ireland and edited a London daily newspaper, was equally plain. "I contend," he said, "that the first thing in this next problem is to provide for the absolutely essential needs of those on subsistence levels." He went on to say that rationing alone would not do it but that "there ought to be some means for these people to supplement their rations, to establish the principle of equality of sacrifice." In this he was in agreement with Mr. Robert Boothby, who had suggested family allowances as a supplement to wages. A practical contribution to the debate was made in a maiden speech by the newly elected—or rather, under the political truce arrangements, newly selected—member for Streatham, Mr. D. Robertson. Mr. Robertson has an expert knowledge of the fishing industry, in which he has important interests, and he proposed that there should be organised a large-scale importation of fish, frozen on the fishing fields of Newfoundland, Nova Scotia and Iceland. Parliament is getting away from theory and generality to the practical and the concrete.

The House discussed last week the railways agreement, a bill to protect small industrial policy holders, road haulage and agriculture. On the main lines of the war effort all parties, with negligible exception, are united, so that war and peace policy are discussed outside the House, on the platform and in the press.

FROM THE PRESS GALLERY

Detention of Mental Defectives

IN the House of Lords on Feb. 6 the MARQUESS OF ZETLAND moved the second reading of the Mental Deficiency (Scotland) Bill. He said that mental defectives in Scotland might be detained either by a judicial order, or at the instance of a parent or guardian or of a local authority with the consent of the parent or guardian. Under the law as it stood such an order was operative for one year, and if the General Board of Control were of opinion that the order should be extended they were under an obligation to inform the defective and the parent or guardian of their intention. The person concerned then had a right of appeal to the court within 14 days of intimation being given. In the case of Innes (or Page) against the General Board of Control the person to whom intimation was given had changed her residence and the intimation was returned through the postal authorities to the board. The Court of Session then held that the original order must be considered to have lapsed and that the person must be released. In order to get over this difficulty, which might often arise, it was proposed to amend the law so that if the board were convinced that a continuation of detention was desirable they could extend the order and it would not be necessary for intimation to have been received. The person concerned would in those circumstances be given the right of appeal to the Sheriff at any time—not only within 14 days of intimation having been given—subject only to the restriction that appeals should not be made more frequently than once in two years or so. Provision was also made for an immediate appeal to the Sheriff in any case in which a person concerned considered that the order was unreasonable.

QUESTION TIME

Medical Examination of Recruits

Sir HENRY MORRIS-JONES asked the Minister of Labour and National Service whether, in order to allay uncertainty among employers and employees and to enable others concerned to make some plans ahead, he would arrange for a medical examination of future categories of those to be called up on military service to take place as soon as practicable, and that the verdict of the medical board should be communicated to such persons as soon as possible.—Mr. ERNEST BROWN replied: The present practice is to require men to register, one age-group at a time, at intervals corresponding to the demands of the Armed Forces, and medical examination follows registration. A rapid acceleration of the process of medical examination would not be practicable and in any case there seems to me to be objections to an extension of the interval between medical examination and enlistment. The grade in which the man is placed by a medical board is communicated to him at the conclusion of the examination.

Postponement of Military Service

Mr. THURTLE asked if, in considering representations made to him that university students should be permitted to delay their military service, he would have regard to the necessity of avoiding action which might have the appearance of preferential treatment for certain classes.—Mr. BROWN replied: Postponement is granted where the statutory authorities are satisfied that exceptional hardship would ensue having regard to the circumstances of the applicants. It is not by any means confined to university students and I am not aware of any ground for suggesting that preferential treatment is given to any particular class of cases.

Calling up of Practitioners

Mr. GROVES asked the Secretary of State for War whether he was aware of the grave discontent amongst the medical profession by reason of men being called upon for professional service with the armed forces although they were married men with families and were in active practice, while younger men without such responsibilities, and who had also volunteered for service, had not been called up; and whether he would take steps to remedy this anomaly.—Mr. OLIVER STANLEY replied: I am not aware of any grave discontent. The position is that all volunteers who are suitable and can, in the view of their local medical war committee, be spared have been, or are being, invited to apply for commissions in the medical service of one or other of the Armed Forces.

Mr. BARTLETT asked why civilian medical practitioners of long experience and with no practices of their own were being dismissed; and had the newly commissioned officers who were taking their place all received an intensive course of training at the R.A.M. College, Millbank.—Sir V. WARRENDER replied: The great expansion of the Army has necessitated the appointment of a large number of additional R.A.M.C. officers available for service wherever required, and these have in certain cases replaced civilian medical practitioners previously employed for local duties only. It is open to civil medical practitioners of suitable age and fitness to apply for commissions, if they are willing to undertake the liability for general service. Newly commissioned officers are trained at various Army medical establishments, including the college at Millbank.

Consultant Advisers to the Emergency Hospital Scheme

Sir ERNEST GRAHAM-LITTLE asked the Minister of Health whether he would give the names of the 11 consultant advisers of the Emergency Hospital Service receiving salaries of £1400 per annum; if these were whole-time appointments, debarring their holders from filling any other paid post or from carrying on private practice; and what was the duration of tenure proposed for these offices.—Mr. ELLIOT replied: The names of the consultant advisers in the Emergency Medical Service, numbering in England and Wales thirteen, were published

in the White Paper (Cmd. 6061) [1] presented to Parliament in July last. Since then Lord Dawson has been added. Seven of these are on a whole-time basis, which debars them from private practice. In the case of any of them who may already have occupied paid posts elsewhere prior to their appointment any necessary adjustment is a matter between them and the employing authority. The remainder are on a part-time basis at proportionate salaries. The appointments will normally continue for the duration of the war.

Cost of Emergency Register

In reply to a question by Mr. GROVES to the Minister of Health, Mr. ELLIOT said that over the past two years £1204 had been paid to the British Medical Association for the remuneration of clerical staff engaged solely on the maintenance and use of the Emergency Register, £543 for postages and £365 for printing and stationery.

Health of the Army

Dr. SUMMERSKILL asked the Secretary of State for War what were the chief illnesses responsible for the deaths of 719 men out of the first casualty list of 758.—Sir V. WARRENDER: It would be undesirable to publish information of this character during the war.

Dr. SUMMERSKILL: In view of the fact that 70 per cent. of these men died in this country, have investigations been made to find out whether the housing conditions have anything to do with it? Are commanding officers advised that it does not benefit the soldier to expose him unduly to cold and damp?—Sir V. WARRENDER: The hon. lady surely knows that it is constantly impressed on officers of all ranks that their first care and duty is the welfare of their men. So far as housing conditions are concerned, in spite of the difficult conditions in which we have to house the men at the present time, every attention is paid to them. The Secretary of State stated last week that the number of deaths from disease was not unduly high, considering the number of men in the Army.

Mr. A. V. ALEXANDER: Are the War Office adhering to the pledge which was given to me that the basis of accommodation should not be less than 50 square feet?—Sir V. WARRENDER: That is another question.

Mr. GLENVIL HALL; What is the reason for the apparently large proportion of deaths of men in the Artillery? Does not that show that the conditions under which they live have something to do with it?—Sir V. WARRENDER: The Artillery is one of the largest corps in the Army.

Sir ERNEST GRAHAM-LITTLE: Were any of these deaths due to cerebrospinal meningitis, and have any precautions been taken against infection?—Sir V. WARRENDER: I cannot answer that question without notice.

Protection of Practices

Mr. GROVES asked the Minister of Health whether he was aware that doctors who were absent from their practices owing to being on active service lost one-half of their National Health Insurance remuneration, and that those practitioners who remained receive per insured person attended much more than the normal capitation fee; and whether he would consider the revision of such arrangements.—Mr. ELLIOT replied: Schemes for the protection of the insurance practices of practitioners on war service usually provide for the payment to the absentee practitioner of half the fees payable in respect of the insured persons on his list, and the distribution of the remaining half among the practitioners accepting responsibility for the treatment of his patients during his absence. It is to be expected that the fees received per accepted patient will be high during the early part of the period when the names of many insured persons who are entitled to treatment have not been placed on any temporary list. I think that the local bodies responsible for these schemes can be relied upon to promote any revision which experience may dictate.

A State Nursing Service?

Mr. DAVID ADAMS asked whether, in view of the certainty that hospitals and nursing-homes would experience even greater difficulty in the near future than was now the case in obtaining a supply of suitable nurses and domestics, he would initiate a state nursing service, including nurses and domestics for all types of military and civilian hospitals for at least the duration of the war.—Mr. ELLIOT replied: I do not think that the situation warrants the establishment of such a state service. The nursing staff is being reinforced for war purposes by the Civil Nursing Reserve, whilst volunteers recruited by such bodies as Women's Voluntary Services are available to augment the paid domestic staff.

Nursery Schools

Mr. PARKER asked the Parliamentary Secretary to the Board of Education how many day nurseries, residential nurseries, nursery schools and nursery classes were evacuated as units; how many of these were still functioning in the reception areas; and how many children were affected in each case.—Mr. KENNETH LINDSAY replied: I understand from the Minister of Health that some 55 day and 36 residential nurseries normally containing about 2400 and 1500 children respectively were evacuated as units from evacuation areas in England. The corresponding number of nursery schools evacuated as units was 59 with a normal accommodation of about 3500. Although it has been necessary to rehouse some of these parties since the original evacuation I am not aware that more than five have either disbanded or returned to the evacuation areas. Nursery classes were not evacuated as units but with the public elementary school of which they formed a part.

Tuberculosis in Wales

Mr. JENKINS asked the Minister of Health whether he was aware that at a meeting of the Welsh Memorial Association, held recently, it was officially stated that there were at present in Wales 800 persons suffering from tuberculosis who were urgently in need of institutional treatment and that there was a potential waiting list of 3000; whether he proposed to take any immediate action to deal with that situation; and, if so, what action.—Mr. ELLIOT replied: I understand that there are at present some 225 patients awaiting admission to residential institutions of the association and that, in addition, there are about 500 patients who were discharged or took their own discharge from these institutions on account of the emergency, who have not returned for the purpose of completing treatment. I am aware of the estimate approximating to 3000 as a potential number of cases of tuberculosis in Wales who ought to be under residential treatment, mentioned in the report of the recent committee of inquiry, but this estimate has no necessary relation to the effective demand for beds. I have, he added, put in hand the construction of additional hospital accommodation in hutments at Denbigh and Chepstow. These hutted hospitals will comprise 960 beds and will be completed this year. I hope that the 360 beds at Denbigh will be available from April onwards,

Meat Rationing

Replying to Mr. T. WILLIAMS, Mr. W. S. MORRISON announced that rationing of butcher's meat would be introduced on Monday, March 11. The ration would be on a value basis and would at the outset be at the rate of 1*s.* 10*d.* per week for each person over six years of age, and half that amount for children less than six years old. A large proportion of the meat supplies available for civil consumption were home-produced, of which the amount coming on to the market varied considerably from week to week. He intended, therefore, to keep the supply situation under constant review and to modify the ration from time to time in the light of existing circumstances. Edible offals, such as liver, kidneys, tongue and oxtail,

1. The names appeared in an appendix to Cmd. 6061 as follows: *England and Wales.*—Dr. Gordon Holmes, F.R.S., neurology; Dr. Bernard Hart, psychiatry; Mr. H. A. T. Fairbanks, orthopædic surgery; Sir Cuthbert Wallace, general surgery; Sir Harold Gillies, facial and jaw injuries; Mr. A Tudor Edwards, chest wounds; Prof. Hugh Cairns, head injuries; Prof. F. R. Fraser, general medicine; Mr. W. M. Mollison, ear, nose, and throat; Mr. C. B. Goulden, ophthalmology; Dr. A. E. Barclay, radiology; Mr. W. Kelsey Fry, dental surgery with special reference to jaw injuries; and Sir Robert Stanton Woods, physical medicine.
Scotland.—Sir John Fraser, Prof. L. S. P. Davidson, Prof. R. W. Johnstone, and Dr. J. H. MacDonald.

and manufactured meats such as sausages and meat pies, would be free of the ration. For the initial period restaurants, industrial, school and other canteens, feeding centres and all forms of catering establishments would be permitted to serve meat free of the coupon, but he would be obliged to restrict the supply to them of all kinds of butcher's meat to a proportion of their normal requirements. The actual proportion would be subject to variation from time to time in accordance with the supply situation.

Health Inspection of Meat

Replying to a question addressed to the Minister of Food, Mr. MORRISON said that so far as he was aware there had been no change in the inspection of animals prior to slaughter since his department assumed control of meat. By arrangement with the City of London he had appointed Mr. L. B. A. Grace, M.R.C.V.S., chief veterinary officer of the corporation, to be technical adviser to the Ministry on the health inspection of meat.

OBITUARY

F. W. W. GRIFFIN

M.D. CAMB.

Dr. Griffin, who died in London on Feb. 8, was a lonely man with many friends. Born at Weymouth in 1881, his father was surgeon to the Royal Hospital and a learned man who had in his time taken first-class honours in natural science at Oxford. From the stately house in Royal Terrace the younger Frederic went to school at Weymouth College and thence to King's College, Cambridge, and St. Bartholomew's Hospital for his clinical work. There he demonstrated biology and qualified in 1907, taking his Cambridge medical degree a year later. After a few months at Moorfields he spent a year at the Royal Sea-bathing Hospital at Margate, and was then for three years assistant to the Children's Infirmary, as it was then called, at Carshalton. At this time he wrote a paper on the administration of tuberculin to children. He then went to Fulham as medical officer to the anti-tuberculosis dispensary, and in 1912 became tuberculosis officer for Surrey, an appointment which was interrupted by war service when he gained the rank of hon. captain R.A.M.C. By training and upbringing interested in bacteriological methods he was at this time assistant in the Virol research laboratory. After the war he accepted a post on the editorial staff of the *British Medical Journal*, where he was the easiest of colleagues to get on with, calm, undogmatic, and friendly. Later he became editor of the *Journal* of the Chartered Society of Massage and Medical Gymnastics. So far no mention has been made of the ruling interest of his life, for he was a group leader of rover scouts, spending his holidays in camp with them and all his spare time in their service. The standard manual on rover scouting is from his pen and his rooms in West Kensington were always open in the evening to young people in association with whom he found his greatest happiness. Griffin himself felt that it was in this work that his talents found their best and most useful expression. He brought to the problems of adolescents something more than sympathy; he seemed to know what their aspirations and difficulties looked like from the inside, for in growing up he had succeeded in taking his own adolescence along with him. But he was in no sense just a man among boys. He had a sort of roving commission in most of the interests of life and one never failed to gain something by his companionship, which derived a piquancy from the fact that he accepted as proved some quite unscientific things like horoscopes.

PROFESSOR DE QUERVAIN

Prof. Grey Turner writes: It was in company with his friend (now Sir) Harold Stiles that I first saw de Quervain at work in 1908 in the surgical clinic at La Chaux-de-Fonds, the small Swiss town which has for so long been the centre of the watch-making industry. There he was building up a fine service, but all the time in close touch with his old school at Berne. I shall never forget one case which showed his originality and resource. It was a badly united fracture of the femur and he was finding difficulty in getting correct alignment and in fixing the fragments. In the middle of the operation, and apparently without premeditation, he sent for an old-fashioned vulcanite pessary. This he heated and moulded into a sort of angulated peg which fitted into the medullary cavities of the bone ends and served to give stability to the fragments while the wound was closed and the limb put up in a fixation apparatus. At that time he was already recognised as an authority on surgical literature and I remember his wonderful collection of reprints and his complete card-index of German and French surgical contributions.

De Quervain was a general surgeon in the widest sense; few have had so complete a knowledge of the whole field. His training as well as his location naturally turned his attention to the thyroid and the ligature of the trunk of the inferior thyroid artery at an early stage in the operation for removal of the gland is usually associated with his name. In the Berne clinic he operated on about 200 cases of goitre each year, and they formed some 15 per cent. of all his operations. All his life he was a student of cretinism and he seemed peculiarly happy when among the patients at the colony for cretins near Berne. As an operator he was not showy but was exact and deliberate and full of resource. He got through a prodigious amount of work, and I once saw him complete five operations for goitre between 8.30 and 11.45 a.m. Though quiet of voice and demeanour and apparently of slow cerebration he was really keen and alert, and when he spoke it was extraordinary what new light he seemed to be able to throw on most matters under discussion. He will be missed at congresses and especially at the International Surgical Society of which he was one of the pillars. His book on clinical surgical diagnosis, remarkable for its wealth of illustration, ran through many editions, and when I last saw de Quervain in Brussels in the autumn of 1938 he told me he had just completed yet another German one.

In his own home town he and Mme de Quervain dispensed a kindly hospitality and he will be mourned by many friends.

LETTERS TO THE EDITOR

TUBERCULOSIS IN MEDICAL STUDENTS

SIR,—Readers of the article in your last issue (p. 263) on the diagnostic service at University College Hospital medical school will, I think, be interested to know that we have started a similar scheme in the Welsh National School of Medicine, Cardiff. The initiation of our scheme is due to the presence of a number of clinical students from U.C.H., for whom the tuberculosis examination has been continued. This incited a similar desire here. It makes a beginning of a complete scheme for the physical examination of students which the University of Wales was about to consider for its constituent institutions, when the war intervened. We are indebted to U.C.H. medical school for its good example and kind assistance, and particularly to Dr. D'Arcy Hart for the help rendered to us.

I am, Sir, yours faithfully,

A. W. SHEEN,
Provost.

SIR,—The interesting radiological findings described by Drs. D'Arcy Hart, Hilton and Morland serve once again to emphasise how dependent investigations of this nature are for their interpretation upon the tuberculin test. It therefore seems unfortunate that such tests were made in no more than 25 per cent. of all cases and, incidentally, in little more than 10 per cent. of cases with positive radiological findings.

Without the evidence so easily obtained from the tuberculin reaction we are unable to decide which of the radiological findings represent lesions directly associated with primary infection and which represent later developments. This consideration is of special interest in the case of the "coin shadows" which perhaps correspond to the well-known *Frühinfiltrat* of Redeker. Apart from its scientific interest this question may have a practical bearing upon treatment. A radiological shadow known to be associated directly with primary infection will usually arouse less anxiety than one which represents a recrudescence of the infection, for the direct origin of phthisis in a primary focus appears to be comparatively rare. As extensive experience gained in student investigations in other countries has shown, the decision as to whether a student with a positive radiological finding should be allowed to continue his work or not may be exceedingly difficult to make and any factors which may help to solve this problem are worthy of consideration. Few students would welcome the prospect of prolonged inactivity if there were any reason to believe that careful and frequent observation would meet the case.

Our knowledge of the incidence of tuberculous infection in various groups of the population in this country is as yet infinitesimal and does not justify a casual attitude towards the tuberculin reaction. The literature of tuberculosis has not been clarified by the vast edifice of theory built up upon the erroneous belief in universal childhood infection.

Further, without venturing to question the propriety of English conservatism (or rather indifference) with regard to the possibilities of preventive vaccination, one might be permitted to point out that the rational use of the B.C.G. vaccine depends upon the systematic performance of tuberculin tests.

I am, Sir, yours faithfully,

The Park Hospital, London, S.E.13. A. L. JACOBS.

VITAMIN E AND NERVOUS DISEASES

SIR,—I have been much interested in Dr. Bicknell's report (Jan. 6, p. 10) of improvement in cases of muscular dystrophy and of amyotrophic lateral sclerosis treated with wheat germ, whose curative property would appear to be closely associated with vitamin E if not the vitamin itself. Dr. Pollak's letter in your issue of Jan. 27 draws attention to the hereditary factor in these conditions, but it seems possible that this might be in reality the result of some dietary deficiency common to a complete household. Comparable muscular degenerations have been many times described in young born from experimental animals partially deficient in vitamin E. As one of the main uses of this fat-soluble vitamin in medicine to-day is the treatment of habitual or threatened miscarriage, it would be of considerable interest to know whether any abnormally high incidence of miscarriage exists among the mothers of boys developing muscular dystrophy.

I am, Sir, yours faithfully,

AUDREY Z. BAKER.

Research Laboratories, Vitamins Ltd., W.6.

A CENTRAL BUREAU OF MEDICAL INFORMATION

SIR,—One can sympathise with Dr. Davidson—the Fellowship of Medicine has done and is doing magnificent work in arranging postgraduate courses—and yet agree with Prof. Grey Turner about the need for a bureau, more personal and intimate, that would be the medical overseas visitor's first port of call. There he would explain his interests to a ready listener; there he would find an interpreter; there a time-table, guide, hotel list—all the bag of tricks of the medical travel bureau—would be lying on the table. Those of us who have visited foreign clinics know how far we in this country fall short in our hospitality to medical visitors from abroad. For that the harassed consultant is not entirely to blame. How can he avoid giving the impression of brusqueness when his daily round includes an outpatient clinic in the northern suburbs, private patients at his rooms, a long operating list at a hospital on the south side, and finally a tutorial class arranged by the Fellowship of Medicine?

And it is not only the foreigner who gets a raw deal when he visits this country. A Dominion doctor wrote in your Grains and Scruples (*Lancet*, 1938, **2**, 1082) of South Africans returning from a pilgrimage to make contacts and see masters at work: "All declared they would never again bother to go to Great Britain unless conditions and the attitude of the men in the great hospitals changed radically. 'In America we were welcomed with friendliness. The leaders of the profession went to no end of trouble to arrange for us to see everything we wished to see. We were treated as honoured and welcome colleagues and guests. No-one was too busy to help us and show us about. In London and Scotland we were made to feel, perhaps quite unintentionally, that the overworked hosts had no time to give us. At best we felt we were just tolerated . . . certainly we were not welcomed.' . . . The arguments that the first consideration of the teachers in London and Scottish hospitals must be given to the students, that these teachers are very overworked, that there is the British Postgraduate Medical School and the Fellowship of Medicine are

valid, but only up to a point. All these arguments also hold good for America, yet—a very great pity."

What of the many students from other lands, the vast majority of whom study in London? What does the University of London do for them except collect their fees? Professor Trevelyan in appealing for funds for Student Movement House has described them as inflammable material; I have seen the effect that curt treatment received in this country has had on them when they return home.

Who should sponsor such a bureau? I think all the royal colleges and universities in the United Kingdom should have a finger in the pie. Some might prefer it to be governmental, in which case the Ministry of Health would be the appropriate body. Perhaps your special commissioner has the answer? Of course the principal would be a medical person, for the bureau would be acting *in loco parentis*. At this juncture in the history of a pathetic world nothing but good would come from such an institution, creating as it would a fraternal spirit irrespective of class, creed or colour.

I am, Sir, yours faithfully,

London, W.1. W. C. W. NIXON.

SIR,—I am sure your readers will be indebted to Dr. Maurice Davidson for bringing the Fellowship of Medicine once more before their notice. I am delighted to have this opportunity of endorsing what he says about the usefulness of that body, and I feel that I ought to be glad that any remarks of mine have stimulated him to a rejoinder. None the less I can assure Dr. Davidson that the Fellowship is not sufficiently known in other parts of the world, and I would reiterate that there is a great lack of knowledge on the part of would-be visitors as to where in this country of ours they might get just the information that would be useful to them in planning a visit to our medical centres. I am also aware that this school, for instance, did start a bureau which was endeavouring to get into its stride just before the war came along, and that the British Medical Association is only too glad to help those who make inquiries from overseas. It is also within my knowledge that there is so much confusion in the minds of would-be inquirers that, in their perplexity, they often write to the Royal Society of Medicine, the Royal College of Surgeons and to the British Council, as well as doubtless to other bodies and to individuals in their search for just the sort of guidance which I think a bureau ought to provide.

Quite clearly, what I ought to have said—and what I meant to say—was that the sooner we in this country establish *one* central bureau of medical information which would come to be recognised as the fountain-head, and which was so well known that everybody would automatically apply to it for help, the better. There is need for such a bureau, and the various bodies I have mentioned should put their heads together and establish a really complete one. Such a bureau would be a national asset and should receive substantial financial aid from our Government. It should have a permanent home in some central position in London with an adequate staff, properly trained and paid, whose business it should be to be able to give information about all the postgraduate medical education in its various branches over the whole of our Empire. Some of its members should be linguists with experience in dealing with visitors from other lands. All inquiring students ought to be made to feel welcome, and steps should be taken to introduce them to some individual at the school or hospital where they propose to work.

The bureau must be in a position to give information and help concerning travel, living accommodation, and other matters which often present difficulties for foreign visitors. At present there is far too much overlapping, and it is no wonder that the foreigner is still at a loss to know to whom or where he can apply.

I am, Sir, yours faithfully,

British Postgraduate Medical School, Shepherd's Bush, W.12. G. GREY TURNER.

HEMIPLEGIA COMPLICATING HYDANTOINATE THERAPY

SIR,—The increase of therapeutic agents in general use makes it very important that any ill effects should be carefully observed and reported. This applies especially to Epanutin, since there is often no margin between therapeutic efficiency and the appearance of toxic signs with this drug. The sudden appearance of ataxia with tremors and nystagmus makes up an alarming picture, and I have recently heard of a patient presenting this syndrome who was admitted to hospital to determine the site and nature of an organic nervous lesion which had apparently supervened on an idiopathic epilepsy. In fact, he was only suffering from epanutin poisoning.

Dr. Blair's case of hemiplegia following epanutin administration reported in your issue of Feb. 10 * merits careful consideration. But I am not convinced that his interpretation of the sequence of events is correct. Unaccountable exacerbations of fits are common in chronic epilepties, whatever medication they are receiving; nor is it uncommon for such exacerbations to be followed by paralyses of varying extent or duration. In a striking case that I know of a boy had 6000 major fits in three weeks, and was left with persistent weakness of the right side of his face and right arm. At the post-mortem examination some years later no local changes to account for this could be found in his brain. In Dr. Blair's case it does not seem clear that there was necessarily any connexion between epanutin and either the exacerbation of fits or the appearance of the hemiplegia. It is, however, a commonplace that all patients taking epanutin need careful watching, and Dr. Blair's experience should certainly be borne in mind.

I am, Sir, yours faithfully,

Lingfield Epileptic Colony, Surrey. J. TYLOR FOX.

CONGENITAL CYSTS OF THE PAROTID GLAND

SIR,—I was much interested in Mr. Moore's account of this rare condition in your issue of Jan. 27, especially as a recent case of my own illustrates certain additional features which may serve to distinguish it clinically from a "mixed" parotid tumour.

The patient, a woman aged 57, complained in August, 1936, of pain in the left side of the face and ear of 2 years' duration. In January, 1937, she came under Dr. M. Kremer's care, when there was a swelling in the left parotid region diagnosed as ? "mixed" parotid tumour. Pain continued intermittently and was described as beginning in front of the ear and spreading over the whole of the left side of the face. It was definitely worse in cold and wet weather, when she also suffered from pains in the back and joints, and headaches. She was subject to colds and sore-throats, and when examined in April, 1937, the throat was very injected. She was referred to me by Dr.

* In an annotation on page 275 of that issue Dr. Blair's case was quoted as an example of hemiplegia following therapeutic convulsions.—ED. L.

Kremer in September, 1939. She had noticed a swelling below the lobe of the left ear for the last 4 years and was certain it varied in size but independently of meal-times. It was sometimes very painful, especially when she was cold or tired. The swelling showed the characteristics of a "mixed" parotid tumour of the size of a small walnut. No enlarged lymphatic glands were palpable.

Operation was performed at the Hampstead General Hospital on Dec. 6, 1939. A vertical incision was made in front of the ear with its lower part curved forwards behind the angle of the jaw. After raising the skin flap, the parotid fascia and superficial part of the gland were incised transversely. Situated deeply in the substance of the parotid was a tense cyst very adherent to the surrounding gland tissue. It was enucleated intact by blunt dissection. A few fine filaments of the facial nerve were in relationship to the cyst. After its removal, the temporo-maxillary vein and external carotid artery were seen to form its bed. The trunk of the facial nerve was not exposed. A small drain was inserted, the parotid fascia sutured with catgut and the skin with fine silkworm gut. The cyst was the size of a small cherry and very tense. It contained brownish fluid with numerous cholesterol crystals. The wall was smooth and shining, although in places there were areas of thickening.

Section shows a typical bronchial cyst, lined by stratified squamous epithelium mostly alternated but in places well formed. Directly beneath is a broad layer of lymphoid tissue with many vessels. Where the epithelium is thin, this layer comes close to the surface. In places the wall is thrown into folds forming polypoid projections in which there is evidence of previous inflammation, there being masses of dense fibrous and vascular granulation tissue interrupting the lymphoid layer. This latter rests on an outer wall of dense fibrous tissue which shows collections of inflammatory cells. The cyst wall is surrounded by somewhat fibrosed salivary gland showing hyperplasia of its ducts and aggregations of small round and plasma cells.

It is well known that inflammation is prone to occur in and around the wall of a branchial cyst, due to infection of the lymphoid tissue. Attacks of pain and variations in size were features in my case, and although the condition is very rare, they might help to distinguish it from parotid tumour. Cervical branchial cysts are most common in females between the ages of 15 and 25. Mr. Moore's case and my own were 60 and 57 respectively. The absence of a direct lymphatic connexion with the mouth cavity, and the denseness of the salivary gland tissue and fascia covering it, may account for the later appearance of congenital parotid cysts.

I am, Sir, yours faithfully,

Harley Street, W.1. CAMERON MACLEOD.

WHO CAN SAVE BY EATING LESS?

SIR,—Now that our patriotic duty is to save money on imports it is profitable to ask ourselves or our doctors the above question. Doctors know that through self-indulgence or erroneous ideas many people eat far more than is necessary. They would live longer and enjoy better health if they ate less: they are said to "dig their graves with their teeth." After the siege of Mafeking it was stated that the besieged were much better in health for their enforced abstinence. This applies specially to prosperous middle-aged and elderly people who lead sedentary lives with little exercise. It applies less to the young and growing, less still to the labourer, and not at all to the poor. As to alcoholic drinks—which demand ships and currency to import them or the destruction of foodstuffs to make them—I think doctors will agree that they are rarely necessities of life but that in moderation they are desirable as occasional luxuries to brighten life—nowadays so important.

I write to a medical paper so that these views can be challenged if necessary. If true, they can enable many people to enjoy a patriotic glow in place of their comfortable feeling of repletion. In the aggregate, this change of habit would contribute vastly to the national effort to save money and shipping in order to win the war.

I am, Sir, yours faithfully,

Hull. FRANK C. EVE.

THE ADVISORY E.M.S. COMMITTEE

SIR,—Dr. Anderson, in his revealing letter, seems to allude to yet another committee which I think I must have missed, and which he describes as having been primarily responsible for the advice given by the Central Medical War Committee to the Ministry on the earlier terms of service, part-time and full-time, offered to medical practitioners in the Emergency Medical Service. It would be useful if Dr. Anderson would disclose the composition of this committee in view of the difficulty of ascribing responsibility for these earlier efforts, which as regards the part-time service failed so completely to satisfy the hospital staffs in London.

With all due deference to Dr. Anderson may I say that I prefer to "elucidate the facts" not from the secretary of the Central Medical War Committee, who cannot pose as a disinterested witness, but from the Minister of Health himself. After all, he is responsible to Parliament for the accuracy of information which he gives to the House. Moreover, Dr. Anderson's own position with regard to this Advisory E.M.S. Committee is a little obscure. His name is not included in the list of members of that committee furnished to the House in an official answer by the Minister on Oct. 26. This committee was there identified by the Minister as a "Special Committee appointed on October 18th." No indication was given in that answer that this committee was, as Dr. Anderson seems to claim, practically a subcommittee of the Central Medical War Committee, deriving its authority from the parent body, which had "delegated the responsibility for presenting the profession's views on E.M.S. problems to the Ministry." It will be interesting to elicit the Minister's comments on this claim.

The two factors primarily responsible for the wholesale reorganisation of the arrangements of the E.M.S. affecting the honorary staffs of voluntary hospitals in London are, I submit: (1) The public consternation, authoritatively voiced in Parliament and in the editorial and correspondence columns of the *Times*, at the dislocation of the hospital services in London occasioned by the earlier measures taken by the E.M.S.; and (2) the revolt of the honorary staffs which followed upon the historic meeting of the Royal College of Physicians on Oct. 12, completely ignored by Dr. Anderson.

Confirmation of this submission is, I think, furnished by certain indisputable facts. Up to the date of an answer in the House on Nov. 2 the numerous and various propositions for part-time service offered by the Ministry, apparently upon the advice of the Central Medical War Committee, the most notable of which are dated Sept. 8 and 18 and Oct. 12 respectively, had attracted only 23 applications out of a personnel of nearly 800. The Special Committee announced by the Minister on Oct. 26 had a very different composition from that of the Central Medical War Committee, for London consultants had for the first time a preponderating voice upon it.

The change thus affected had a very swift effect. The much more equitable part-time offer contained in the circular of Nov. 29 reversed the whole position very satisfactorily. As I pointed out in the *Times* of Dec. 29 (Dr. Anderson misrepresents my letter), within a fortnight of the offer being made the Minister was able to announce in Parliament on Dec. 14 in answer to my question that 337 out of nearly 800 specialists had accepted it.

Unfortunately, in the same answer the Minister declared that the offer could not be extended as I asked to members of the E.M.S. receiving the second-grade salaries for whole-time service, as "this suggestion had not been made by the Special Committee." This refusal was repeated by the Minister for the same reason on Jan. 25. Dr. Anderson now announces, with what authority I do not know, that this committee has recently recommended the extension which I asked for on Dec. 14. I submit, Sir, that this account of the events in the E.M.S. since the war opened is more reliable than that offered by Dr. Anderson.

The Minister in his answer to me on Feb. 8 [1] gave information disclosing the composition and functions of committee No. 4 in my list.[2]

I am, Sir, yours faithfully,

House of Commons. E. GRAHAM-LITTLE.

THE MIND OF HITLER

SIR,—Drs. Dillon and Ross have torn from its context a phrase of mine in praise of Hitler contained in a scientific paper which I read to the British Association on Sept. 3, 1937. At that time I was trying to get an interview with Herr Hitler, in the interests of psychology, and therefore could not stress the defects of his qualities such as were already becoming apparent.

I am, Sir, yours faithfully,

WILLIAM BROWN.

RANK AND EXPERIENCE

SIR,—Rubbing salt into the wounds of punishment is an old torture, but may I humbly call further attention to our military medical services? It is almost six months since the hundreds of medical men from the reserves were called to the colours. Many had served for several years as volunteers. Many again complained in the early days of this war to their representative association, the B.M.A. *All* communication with the Association to which we have again honourably and hopefully subscribed has been turned aside to the Central Emergency Committee, no matter how personal its nature, as long as it came from a serving officer! Is the Central Emergency Committee no longer an arm of the B.M.A.? It appears to be fettered by service bureaucrats, and its rosy promises remain unfulfilled.

Six months ago few of us could have conceived the bitter treatment which continues to be measured out to many of our "reserve" friends, both by local and high administrative officers. They block the "usual channels" of communication through which we might complain or even inquire. They delight in our subjection, and their cool indifference is not offset by the knowledge that our country is at war. Mature physicians and established consultants in all branches of medicine and surgery are not only waiting in relative idleness, but are being subjected to petty dictatorship by those who are their juniors. The R.A.M.C. is old and has traditions; the R.N.V.R. is mature and has a peculiar task; the R.A.F.V.R. is in its infancy, and has no history except its prodigious growth. Many of us have worked annually in units of these services, doing our best to be prepared for this emergency. We were welcomed, personally and officially, and our numbers have been used to aid the boast of political debate; but now neither our advice nor our feelings are regarded, and our complaints ignored. The personal position of many of us may be happy, but I speak too for those gentlemen in the profession whose experience and character we have learned to admire and respect in civil life—the staffs of our teaching hospitals, both in London and the provinces.

Surely there must be *some* men whose influence and courage are unchecked either by service bureaucracy or by the B.M.A.? There must be some solution to a problem which is growing intensely critical, to the detriment of professional harmony.

I am, Sir, yours faithfully,

JUNIOR.

WHEAT GERM AND VITAMIN B_1

SIR,—In the annotation on pink disease in your issue of Feb. 3 (p. 229) you write "Forsyth has been favourably impressed with the oral administration of vitamin B_1 in the form of wheat-germ oil, Bemax or the crystalline preparation . . ." It is not clear whether these are Forsyth's words or your own; in any event they point to a suspension of natural phenomena. Vitamin B_1 (aneurin chloride hydrochloride) is a water-soluble substance completely insoluble in oil; wheat-germ oil is, as it must be, completely devoid of vitamin B_1. If Forsyth's treatment succeeded with wheat-germ oil, then it must have been due to something fat-soluble; if his treatment succeeded with crystalline aneurin, then it must have been due to something water-soluble. It is difficult to understand how he can have achieved a genuine success with both substances.

I am, Sir, yours faithfully,

Glaxo Laboratories Ltd., Greenford. A. L. BACHARACH.

*** Dr. Forsyth was writing of wheat germ, not wheat-germ oil. We regret the slip.—ED. L.

PRIVATE PRACTICE IN FRANCE

EVEN before the war the lot of the general practitioner in France had become hard owing to congestion in the profession, rising taxation, and the extension of public and charitable medical services provided for the poor and exploited by the well-to-do. The war has supplied the last straw; more than half the doctors in France have been swept into the army in which they have been aimlessly kicking their heels while waiting for war-time casualties. One would think that the remaining civilian doctors must be overworked and earning handsome incomes. A hint as to the fallacy in this assumption is to be found in a Government order, dated Dec. 1, 1939. This points out that army doctors are forbidden to give their services to persons outside the army, except for humanitarian reasons, and that no army doctor may accept a fee from a civilian. Another order, dated Nov. 1, expresses disapproval of doctors who have joined the army being stationed in areas in which they practised in peacetime—a provision obviously intended to prevent a doctor from carrying on his private practice in spite of his whole-time service in the army. Civilians show a growing tendency to seek free medical advice from doctors in uniform, and when doctors return to their private practices they may find their patients even less willing to pay for services rendered than before. Many a doctor now receiving a regular income from the army dreads the day when he will again have to face the vicissitudes of private practice.

1. See Question Time in Parliament p. 338 of this issue.
2. *Lancet*, Feb. 3, 1940, p. 241.

MEDICAL NEWS

University of Oxford

An extra examination, in all first B.M. subjects, will be held between March 11 and 19. An extra examination in general pathology and bacteriology (new regulations) and in pathology (old regulations) will be held between April 1 and 5. There will be no extra examination in any other subject of the second B.M. course.

Mr. J. P. Horford has been appointed a clinical examiner for the B.M. examination.

Dr. E. G. T. Liddell, F.R.S., university lecturer in physiology and fellow of Trinity College, Oxford, has been appointed to the Waynflete chair of physiology.

University of Cambridge

Prof. A. V. Hill, F.R.S., and Prof. John Ryle have been nominated to represent the university in Parliament.

The Raymond Horton-Smith prize, which is awarded annually for the best M.D. thesis, has been gained this year by Dr. Leslie Foulds. His subject was experimental investigations on the nature and causation of tumours. Dr. G. D. Hadley was next in order of merit. His subject was gastroduodenal hæmorrhage.

Trinity College has established a studentship for the study of psychical research out of a bequest left for that purpose by Mr. Frank Duerdin Perrott as a memorial to F. W. H. Myers. Psychical research is defined as "the investigation of mental or physical phenomena which seem *prima facie* to suggest (*a*) the existence of supernormal powers of cognition or action in human beings in their present life, or (*b*) the persistence of the human mind after bodily death." The studentship, which will be of a value not exceeding £300 per annum, is open to any person who shall have completed his or her twenty-first year at the time when the election takes place during the Easter term. A student may be re-elected once, but not more than once. Applications from candidates should be sent to Prof. C. D. Broad, Trinity College, Cambridge, before May 6.

Royal College of Physicians of London

In addition to the 150 candidates whose names appeared in our issue of Feb. 3 (p. 249), licences to practise have been granted to the following 57 candidates (47 men and 10 women) who have passed the final examinations of the conjoint board and complied with the by-laws of the College:—

P. T. Anderson, Middlesex; G. W. S. Andrews, St. Mary's; J. A. Atwill, St. Bart's; G. E. Badman, L'pool; F. D. Beddard, St. Mary's; Margaret Bennett, Roy. Free; Helen Blumenfeld, Roy. Free; Winifrid Margaret Bond, King's Coll.; J. G. Brown, Melb.; J. K. Chisholm, St. Bart's; R. B. Clayton, Guy's; F. B. Cockett, St. Thos.; G. G. Cooley, Sydney; John Crabb, London; L. A. Cruttenden, Westminster; R. B. J. Cuddon-Large, St. Bart's; F. L. Davies, London; H. V. Dholakia, Bombay; D. M. Douglas, Guy's; Maurice Gold, Univ. Coll.; Philip Harvey, Guy's; B. M. Heap, Guy's; R. A. Henson, London; D. G. Howell, Cardiff; D. B. Irwin, Westminster; Edward Jones, St. Mary's; Herbert Kalmanoff, Camb. & King's Coll.; Isaac Klass, Manc.; J. M. Knight, Leeds; G. T. Lavery, Camb. & Manc.; A. B. Lennie, Guy's; G. L. Lewis, Westminster; Christopher Lewthwaite, Univ. Coll.; Jean D. McKendrick, King's Coll.; Margaret E. McKendrick, King's Coll.; G. A. Matthews, Univ. Coll.; R. M. Mayon-White, St. Thos.; C. F. Miller, Camb. & St. Bart's; P. L. F. Mortimer, London; J. F. Mullan, St. Bart's; E. D. V. Nicoll, St. Bart's; Dennis Nixon, St. Thos.; Mary P. Parish, King's Coll.; J. L. Pinniger, Oxfd & St. Thos.; Minnie Pomerance, West Lond.; Ella Schwartzman, Roy. Free; L. B. Scott, St. Thos.; J. C. Scott-Baker, Charing Cross; K. C. W. Shawcross, London; Evelyn H. Singer, Roy. Free; J. L. S. Smith, Westminster; Matthew Steel, Univ. Coll.; Jack Tarlo, Westminster; F. S. D. Thompson, London; Marguerite Watts, Roy. Free; F. A. Whitlock, St. Thos.; and Andrew Zinovieff, Middlesex.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty on Feb. 5, with Dr. J. Souttar McKendrick, the president, in the chair, Dr. Sanguan Rojanavongse (Bangkok, Thailand) was admitted to the fellowship.

Society for the Study of Inebriety

The annual meeting of this society will be held at 11, Chandos Street, London, W.1 at 4 P.M. on Tuesday, April 9, when Dr. W. Norwood East will open a discussion on the aims and work of the society.

Royal College of Surgeons of England

At a meeting of the council held on Feb. 8 with Mr. Hugh Lett, the president, in the chair, the Hallett prize, which is awarded on the result of the primary examination for the fellowship, was presented to Mr. James Grayton Brown, of the University of Melbourne.

Mr. Ernest Hey Groves will deliver the Moynihan lecture on March 14.

The Robert Jones lecture will be given by Mr. T. P. McMurray, and there will be three lectures in physiology during May.

Prof. R. J. S. McDowall will speak on the circulation in shock on May 2; Prof. E. D. Adrian on pain on May 9; Prof. A. D. MacDonald on experimental spinal anæsthesia on May 16. Mr. Gwynne Williams will give six demonstrations in pathology in April.

Diplomas of membership were granted to the candidates named as receiving the licence of the Royal College of Physicians in our issue of Feb. 3, p. 249, and in the supplementary list published in this issue. Diplomas in public health and in medical radiology were granted jointly with the Royal College of Physicians to the candidates also mentioned on p. 249.

Royal College of Physicians of Edinburgh

At a quarterly meeting of the college on Feb. 5, with Dr. Alexander Goodall, the president, in the chair, Dr. T. A. H. Munro (Colchester) and Dr. H. W. Dryerre (Lasswade, Midlothian) were introduced and took their seat as fellows of the college. Dr. P. C. Davie (New Zealand), Dr. P. K. Bardhan (Calcutta), Dr. C. G. Magee (London), Prof. F. A. E. Crew (Edinburgh), Dr. Frank Riggall (Arkansas, U.S.A.), Dr. A. J. Wilson (Coventry) and Dr. J. L. Henderson (Edinburgh) were elected to the fellowship.

Ophthalmological Society of the United Kingdom

The annual congress of this society will be held at 1, Wimpole Street, London, W.1, on April 25 and 26, when Prof. A. J. Ballantyne will open a discussion on the choice of operation for glaucoma. Further information may be had from the secretary of the congress, Mr. J. H. Doggart, 49, Wimpole Street, W.1.

Society of Radiographers

This society held its Stanley Melville memorial lecture and nineteenth annual dinner at the Connaught Rooms on Feb. 10, when Mr. G. W. C. Kaye, D.Sc., the president spoke on the story of radium protection. At the dinner the president proposed the health of The Guests, and Colonel D. B. McGrigor, president of the British Institute of Radiology, replied. He said that radiographers who joined the fighting services, particularly the Army, would encounter conditions very different from those to which they were accustomed in civil practice. They might have to organise departments in huts and other kinds of temporary buildings, and to overcome great difficulties. Mr. W. E. Schall, chairman of the British X-ray Apparatus Manufacturers, mentioned some of the members of the society who were doing valuable work for the nation in quite different fields. In fact, radiographers seemed to have a finger in every pie and it would pay Herr Hitler to make a separate peace with them. The health of The Society was proposed by Mr. V. E. A. Pullin, D.Sc., now attached to the Air Ministry, who explained the value of radiographers to the nation and the community. The President, in reply, announced that the Radiography Award was divided this year between Mr. O. M. Alexander and Mr. W. Watson; and the Archibald Reed award had been won by Miss M. Newey. A short entertainment followed, during which Colonel Struthers Fulton divulged some secrets of War Office organisation during the last war. The attendance was unexpectedly good: 135 members and guests sat down, some of whom had come from the north of Scotland and Wales.

Captain G. S. Elliston, M.P., has been elected to represent the Corporation of London on the Metropolitan Water Board.

University of Leeds

The faculty of medicine of this university has decided that the lectureship endowed by the late Lord Moynihan shall be held biennially. It is hoped that the first lecture will be delivered in October, 1940, by Mr. G. Gordon-Taylor.

Royal Institute of Public Health and Hygiene

The Harben gold medal for 1940 has been awarded to Sir Leonard Hill, F.R.S., and the Smith award for 1940 has been conferred upon Sir William Savage.

Lieut.-Colonel J. S. K. Boyd has been appointed Harben lecturer for 1940. He will speak on modern practice in war-time immunisation of soldiers and civilians.

Ella Sachs Plotz Foundation

During the sixteenth year of this foundation for the advancement of scientific investigation, sixty-two applications for grants were received by the trustees, thirty of which came from the United States, the other thirty-two coming from fourteen different countries in Europe, Asia, Africa, South America and North America. The total number of grants made during the year was thirty-two. Grants are made to researches on problems in medicine and surgery or in branches of science bearing on medicine and surgery. They may be used for the purchase of apparatus and supplies that are needed for special investigations, and for the payment of unusual expenses incident to such investigations, including technical assistance, but not for providing apparatus or materials which are ordinarily a part of laboratory equipment. Stipends for the support of investigators are granted only under exceptional circumstances. The maximum size of grants will usually be less than $500, and applications for the year 1940–41 should be sent before April, 1940, to Dr. Joseph C. Aub, Collis P. Huntington Memorial Hospital, 695 Huntington Avenue, Boston, Massachusetts, U.S.A.

Vacancies

Aberdeen Royal Infirmary.—Registrar to orthopædic dept., £200.
Ashton-under-Lyne District Infirmary.—Cas. O., at rate of £180.
Barking Corporation.—Res. M.O. for Council's Upney (Maternity) Hosp., £350.
Birmingham, City, Dudley Road Hosp.—Jun. M.O., at rate of £200.
Birmingham, Romsley Hill Sanatorium.—Res. asst. M.O., at rate of £240.
Birmingham Royal Cripples' Hosp.—Res. H.S., at rate of £200.
Birmingham United Hosp.—Res. cas. H.S., at rate of £70.
Bolton Royal Infirmary.—Asst. res. surg. O., £200.
Brighton, Royal Sussex County Hosp.—H.P., £150.
Cambridge, Addenbrooke's Hosp.—Res. anæsthetist and emergency officer, at rate of £130.
Charing Cross Hosp., W.C.2.—Second surg. reg., £150.
Doncaster Royal Infirmary.—H.S. to ear, nose, and throat and ophth. depts. and res. anæsthetist, at rate of £150.
East Ham Memorial Hosp., Shrewsbury Road, E.7.—H.S. and Cas. O., at rate of £120. Also H.P., at rate of £150.
Huddersfield Royal Infirmary.—Cas. O., at rate of £200.
Hull Royal Infirmary.—H.S., at rate of £160.
Ilford, King George Hosp.—Res. anæsthetist, at rate of £150.
Ipswich, East Suffolk and Ipswich Hosp.—H.P., H.S.'s, and cas. O., each at rate of £144.
King Edward Memorial Hosp. Ealing, W.13.—Cas. O. and H.S., at rate of £150.
Lancashire County Council.—Jun. asst. M.O. for Wrightington Hosp., jun. asst. M.O., £300.
Leicester City General Hosp.—Deputy med. supt. and surgeon, £500.
Leicester, City Isolation Hosp., Groby Road.—Res. M.O., at rate of £300.
Leigh Infirmary.—Jun. H.S., at rate of £150.
Lincoln County Hosp.—Jun. H.S., at rate of £150.
London County Council.—Temp. asst. M.O. (class I), £350.
Manchester, Royal Children's Hosp., Pendlebury.—Res. asst. M.O. for outpatients' dept., at rate of £150.
Müller General Hosp., S.E.10.—H.P., at rate of £100.
Northampton General Hosp.—H.S. to ear, nose, and throat dept., at rate of £150.
Nottingham Children's Hosp.—Res. H.P. and res. H.S., each at rate of £150.
Nottingham Hosp. for Women.—H.S., at rate of £150.
Oldham Royal Infirmary.—Two H.S.'s, each at rate of £175.
Penshurst, Cassel Hosp., Swaylands.—Locum tenens, 8 guineas.
Plymouth, Prince of Wales's Hosp., Greenbank Road.—H.P. and res. anæsthetist and H.S., each at rate of £120. Also sen. H.S. for Devonport Section, at rate of £130.
Poplar Hosp., East India Dock Road, E.14.—Second res. O., at rate of £175.
Preston County Borough, Sharoe Green Hosp.—Jun. asst. res. M.O., at rate of £100.
Preston Royal Infirmary.—H.S., at rate of £150. Also Temp. obstet. officer, £800.
Queen's Hosp. for Children, Hackney Road, E.2.—Cas. O., at rate of £100.
Reading, Royal Berkshire Hosp.—Asst. surg. reg.
Royal London Ophthalmic Hosp., City Road, E.C.1.—Sen. res. O., at rate of £150.
Royal South Hants and Southampton Hosp.—Cas. O., H.S., and H.S. to ear, nose and throat dept., each at rate of £150.
Sheffield Children's Hosp.—H.P., at rate of £100.
Sheffield, Jessop Hosp. for Women.—Res. M.O., at rate of £150.
Staffordshire County Council.—Temp. asst. M.O., £600.
St. Helens County Borough.—Asst. M.O., £600.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S., at rate of £150.
Stourbridge, Corbett Hosp.—Res. surg. O., £200.
Swansea General and Eye Hosp.—Cas. O., at rate of £150–£175. Also res. anæsthetist, at rate of £150.
Tancred's Studentships.—Each £100.
Westminster Hosp., St. John's Gardens, S.W.1.—Wander scholar £250.
Winchester City.—M.O.H., £850.
Wolverhampton Royal Hosp.—Res. asst. pathologist and res. M.O., £200.
York Dispensary.—Res. M.O., £200.

Medical Diary

Week beginning Feb. 19

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1.

THURSDAY.—2.30 P.M., Dr. W. D. W. Brooks: The Pathology and Treatment of Pulmonary Tuberculosis. (Goulstonian lecture.)

ROYAL COLLEGE OF SURGEONS, Lincoln Inn Fields, W.C.2.

MONDAY.—3 P.M., Dr. S. A. Henry: Cancer of the Scrotum in relation to Occupation. (Hunterian lecture.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1.

WEDNESDAY
Comparative Medicine, Epidemiology and State Medicine: 2.30 P.M., Sir William Savage, Mr. R. Lovell, Ph.D.: Salmonella Infections. Dr. W. Scott and Mr. R. F. Gordon will also speak.

THURSDAY
Neurology and Ophthalmology: 2 P.M.
Prof. Geoffrey Jefferson, Dr. del Rio Hortega, Mr. A. C. Hudson, and Mr. E. Wolff: Tumours of the Optic Nerve.
Urology: 2.30 P.M., a clinco-pathological meeting.

FRIDAY
Disease in Children: 2.30 P.M.
Dr. H. C. Cameron and Dr. Mildred Creak: The Problems of the Evacuee Child.

CHADWICK LECTURE

TUESDAY.—2.30 P.M. (26, Portland Place, W.1), Sir Arthur MacNalty: The Public Health in War-time.

TAVISTOCK CLINIC, Westfield College, Kidderpore Avenue, N.W.3.

MONDAY.—3 P.M., Dr. Emanuel Miller: Type Diagnosis. 4.15 P.M., Dr. Miller: Ethical Aspects of Psychotherapy.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12.

TUESDAY
2.30 P.M., Lord Horder: ward clinic.

WEDNESDAY
11.30 A.M., clinico-pathological conference (medical), 2 P.M., Prof. J. H. Dible: The pathology of some liver diseases. 3 P.M., clinico-pathological conference (surgical).

THURSDAY
2 P.M., Dr. Duncan White: radiological conference.

FRIDAY
2 P.M., clinical-pathological conference (gynæcological).

DAILY
10 A.M.–4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological, clinics and operations. 1.30 P.M.–2 P.M., post-mortem demonstration.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.

MONDAY to SATURDAY.—Brompton Hospital, S.W.3.

MON. and THURS. 5 P.M.—M.R.C.P. course in chest diseases. Medical Society of London, 11, Chandos Street, W.1. Primary F.R.C.S. physiology course.

Dr. WILLIAM ROTHSCHILD JOHNSON, who died recently in Java as the result of an accident to a passenger aeroplane, finished his medical course at Trinity College, Dublin in 1929. He had distinguished himself there both in academic work and sport. He won the Wheeler gold medal in surgery at the Royal City of Dublin Hospital, and high places in many of the university examinations. He was light-weight boxing champion of the university in two successive years. For some years past Dr. Johnson was engaged in the public-health service at Shanghai, and he was on a holiday trip to Australia when he met his death. He leaves a widow and three children.

NOTES, COMMENTS AND ABSTRACTS

HOW DO DRUGS ACT?

ADDRESSING an evening meeting of the Pharmaceutical Society on Tuesday Sir Walter Langdon-Brown said, "You will observe that my title is not 'How Drugs Act' but 'How do Drugs Act?' with a very large query." When the doctor gives ipecacuanha for amœbic dysentery or quinine for malaria, he knows the reason, but not when he gives colchicum for gout or salicylates for rheumatism. "I am therefore constrained," said Sir Walter, "to utter a plea for empiricism, especially as I still remember the scorn of the pharmacologist for the clinical belief in cod-liver oil before vitamins were discovered." To get an idea of the way drugs can influence the tissues of the human body it is probably best, he suggested, to study the behaviour of those substances which the body forms for its own purposes, as well as of those highly active catalysts it obtains through food, for it was the discovery of hormones and vitamins which revived the belief implied every time a bottle of medicine is prescribed that the body can be influenced by chemical means. He classified the principal ways in which drugs act as follows: (1) they increase or diminish the effects of stimuli reaching the cell from without; (2) they modify the chemical changes occurring within the cell itself; (3) they may themselves be so altered in chemical constitution by the cell as to be capable of fresh activity, yet with diminished toxicity. Some of the best illustrations of the first group can be obtained from hormones, of the second from vitamins and of the third from chemotherapy.

In reviewing the first group he gave examples showing how the normal transmission of the nervous stimulus is effected and of the ways in which it may be interfered with or assisted by certain drugs. It was, he said, little realised at the beginning of this century that a new era in pharmacology had dawned when Langley showed that the effect of adrenaline on any part was the same as if the sympathetic nerve to it had been stimulated. Since then sympathetic stimulation had been found to produce adrenaline at the nerve-endings; this was in addition to the adrenaline always stored in the medulla of the adrenal gland, which could be drawn upon when there was a sudden demand for widespread action of the sympathetic for purposes of defence. As an example of the way in which drugs may bar the entrance of stimuli into the cell by being adsorbed in the cell envelope he instanced the barbiturates. It was interesting to note that general practitioners had come to use phenobarbitone extensively, but merely empirically, in the treatment of hyperthyroidism. This purely clinical observation received a rational explanation when Zondek showed that barbiturates interfered with the entrance of thyroxine into the cell by forming this protective envelope.

In discussing the second group the lecturer started by an examination of some of the activities of thyroid extract; one thing about thyroxine, he said, was that it caused the consumption of more oxygen because of the increased rate of combustion and that led him to the question of the influence of drugs on oxidation within the cell.

"Why do you remain out of breath for some time after violent exertion? Because you have incurred what has been called an oxygen debt, which has to be repaid by inspiring increased amount of air afterwards. Sugar is the fuel used by the muscles, and if this is not completely oxidised some of it remains in the circulation as lactic acid, which irritates the respiratory centre to increased activity. Since the burning of a piece of sugar is a simple matter, one might suppose that to oxidise it within the body would also be simple. But the body has to carry out the process without alterations of temperature, osmotic pressure and so on, which renders it a highly complicated procedure. A whole series of enzymes are required, and a very interesting fact has recently been discovered—namely, that vitamin B_1 is an essential partner in this series. The more sugar—or starch, which becomes sugar—that we eat the more vitamin B_1 we need to oxidise it. But there is another thing which needs this vitamin to oxidise and which is sometimes unfortunately taken in excessive amounts, and that is alcohol. It has recently been discovered that alcoholic neuritis can be greatly alleviated by large doses of vitamin B_1 even though the patient continues to drink. The neuritis is not due to the alcohol itself but to the alcohol capturing the vitamin before it can get to the nervous system, where it is needed if the nerve-cells are to utilise the oxygen. Alcoholic neuritis is therefore a deficiency disease in exactly the same way as beriberi is due to eating polished rice and therefore taking a lot of starch without the compensating vitamin."

The third group was illustrated by chemotherapy. Strictly speaking, said the lecturer, the treatment of any malady with a chemical agent might be included in the term, but actually it was limited, almost universally, to the treatment of parasitic disease by chemical disinfection or control of the causative agent without producing marked toxic effects in the patient.

A CHANGE OF NAME

DURING the 53 years of its existence *Nursing Notes* has always devoted much of its space to the problems and activities of the midwife, and the meetings of the Midwives' Institute have been reported at length in its columns. In its first issue for this year it now openly acknowledges the midwife as its "chief interest and responsibility," and announces that in future it will appear under the title of the *Midwives' Chronicle and Nursing Notes*. We wish the journal well and hope that it will serve its readers at least as well and as long under its new name as under its old. Our good wishes are sincere but we must admit to being a little hurt in our better editorial feelings. In recalling its early history the *Midwives' Chronicle* suggests that one of the storms it has weathered was an angry attack delivered against it in a letter published in THE LANCET (1888, **1**, 345) to which in due course it published a dignified reply. But it might perhaps have been fairer to our impartiality to mention that a reply was also published in THE LANCET (*ibid*, p. 426) when a further letter of equal length (and no doubt of equal anger) appeared in defence of *Nursing Notes*.

"YOU HAVE BEEN WARNED"

THE United States food and drug administration are taking measures to enforce the section of the new Pure Food, Drug and Cosmetic Act which provides that "warning" statements must be printed on the labels of preparations capable of causing damage if misused. Manufacturers have been given specimens of the kind of warning which will be approved. Cathartic or laxative drugs which act as irritants to the gastro-intestinal tract or stimulate intestinal peristalsis should be labelled: "Warning. Not to be used when abdominal pain (stomach-ache, cramps, colic) or other symptoms of appendicitis are present. Frequent or continued use of this preparation may result in dependence on laxatives." For preparations containing iodine and iodides the example given is: "Do not use in case of lung disease or chronic cough, goitre or thyroid disease, except on the advice of a physician. If a skin rash appears discontinue use"; and for cough mixtures: "Important: persistent coughs may indicate the presence of a serious condition. Do not use this preparation when the cough has persisted for ten days without securing competent advice." It is too much to expect our own Government in time of war to tackle the problem of popular over-drugging but later they might usefully examine an American method which is clearly well-intentioned.

DOMESTIC METEOROLOGY

CONTINUING his thoughts on the moisture absorbed by clothing Dr. A. J. Copeland writes:—It may be convenient to use a new word to denote water vapour absorbed by or expelled from textiles: perhaps the old word hudor will be useful again. With so much in the air, in the coldest months we require better protection than hung tiles, half-fired bricks, single slate courses, cemented, not mortared, walls, wall cavities choked with rubble and the like. Wool and flock mattresses are especially hudorous at this time of year. Has wool lost some protective quality—e.g., a natural oil—in the process of manufacture? Modern spring mattresses, covered as they are with linen or taffeta, containing vaporous air renewed through perforations, act as heat withdrawal systems, themselves remaining cold all night.

The assumption that hudorous undergarments and sheets are harmless because a wet vest in a diving suit, or a wet sheet under two warm blankets well tucked in, on a waterproof, feels warm, has three fallacies. 1. The garment, whether hudorous or wet, must first be raised to body temperature. This causes a cardiovascular stimulation, followed by reaction, both of which need watching. A wet pack is given at 60–70° F.; hudorous sheets or clothing at this time of year are at 40° F., or even 33° F., as I have found. 2. Heat equilibrium, once established, is maintained by two warm blankets (or the diving suit!): it is otherwise with suits, dresses and bedding, even if anhudorous. 3. Cases for hydrotherapy are selected.

Present methods of bedwarming by hot bottles and electric pads, while comforting, can only transfer some hudor to another part of the bed, and have no effect on the mattress. The electric blanket, used all day, is better, especially for repelling vapour, but has the same objection. Better results might be obtained from the warming pan.

Suggestions for remedies are: building reform; vapour-proof boxes or containers, cold or preferably heated, for underclothes at night and bedclothes by day; double-door wardrobes with special lining; daily drying close to a fire; hooded "battle jerkins" and mittens of corduroy, leather, or other damp-proof material, lined with fur in the hood, provided as part of all winter uniforms; mattresses covered with proofed linen; lastly, investigation of the effect of cold vapour on healthy and diseased air-passages.

The pathogenesis of several winter ailments is still unknown. Without basing major conclusions on minor premises, is it not possible that some of these complaints may be manifestations of one reaction, the reaction to exposure to heat-loss, especially at night?

THE NIGHT-CAP AND DENTAL CARIES

ANYTHING that might throw light upon the causation of dental caries in children merits attention. Mr. Frank Jones, a dental officer in the Middlesex School Medical Department, wonders whether there may not be an abnormally high proportion of carious teeth among children who are given food-drinks of one sort or another before going to bed. In the *Medical Officer* for Jan. 20 (p. 27) he suggests that a widespread investigation on the following lines might yield results. In a group of children aged from 11 to 14 years he would note (*a*) the age, (*b*) the number of carious teeth present, (*c*) the number of permanent teeth lost through caries, (*d*) the number already filled, (*e*) particulars of the last food or drink taken before going to bed, and (*f*) whether the teeth are regularly cleaned at night. To amplify the investigation he would also press for an analysis of the saliva of selected children of various ages. He points out that, during sleep, the cleansing action of the saliva is no longer operative. Dr. Jim Wallace suggests that, if there is any substance in Mr. Jones's contention, some kind of soup might prove a better night-cap for children than cocoa or other food-drinks. Mr. Jones further stresses the importance of thorough mastication of fibrous foods as the best means of developing the jaws, keeping the teeth clean and the gums healthy.

URGES OF THE MAN IN THE STREET

IN Psychical Forces and You (London: L. N. Fowler and Co. 1939. Pp. 287. 7*s*. 6*d*.) Mr. Vernon-Worsley expounds from his personal experience and reading the psychic forces which influence the ordinary man and woman. The book contains chapters on yoga, mediumship, and psychic science and crime. Unfortunately much of the evidence on which such work is based is not capable of scientific proof. The author is aware of this and expresses his impatience with the scientists who are not prepared to accept the evidence that he himself finds so convincing. He appears to have a firm belief in "possession" as a cause of both insanity and crime, and he urges that this should be recognised by psychologists. The idea seems to be a step in the wrong direction, and the author's belief that psychologists will find it unacceptable is probably well founded.

Appointments

DILLON, FREDERICK, M.D. Edin., hon. psychologist to the St. Marylebone and Western General Dispensary.

Examining surgeons under the Factories Act, 1937: Dr. G. L. S. PLUMBLY (Watton district, Norfolk); Dr. C. M. MCINTYRE (Islay district, Argyllshire).

Medical referee under the Workmen's Compensation Act, 1925: Dr. G. R. WARD for the county-court districts of Bromley and Sevenoaks (circuit No. 56).

Colonial Service.—The following appointments are announced: ABBOTT, T. K., M.B., D.P.H., health officer, Hong-Kong; AUDY, J. R., M.B., medical officer, Somaliland; BROWNE, M. P., M.R.C.S., medical officer, West Africa; DALY, E. J., L.R.C.P.I., D.T.M. & H., temporary medical officer, Gold Coast.

Births, Marriages and Deaths

BIRTHS

BARRY.—On Feb. 6, at Devonport, the wife of Surgeon Commander T. L. J. Barry, R.N.—a son.

CAMPBELL-FERGUSON.—On Feb. 8, at Royston, the wife of Dr. C. H. Campbell-Ferguson—a son.

DORAN.—On Dec. 17, 1939, at Bareilly, India, the wife of Captain B. J. Doran, I.M.S.—a son.

GARDINER.—On Feb. 12, at Exeter, the wife of Mr. A. C. Gairdner, F.R.C.S.—a daughter.

GRAHAM.—On Feb. 9, at Westminster Hospital, the wife of Dr. M. P. Graham—a son.

RAEBURN.—On Feb. 5, at Adlington, Cheshire, the wife of Dr. H. A. Raeburn—a son.

RICHARDS.—On Feb. 9, the wife of Captain A. H. M. Richards, R.A.M.C., of Reigate—a son.

WALKER.—On Feb. 6, at Sevenoaks, the wife of Dr. C. G. Walker, of Oxted—a son.

WILSON.—On Feb. 6, at Felstead, Essex, the wife of Dr. R. Wilson—a son.

MARRIAGES

FENTON—IRVINE.—On Feb. 8, at Barking, Charles Edmund Fenton, M.R.C.S., Major R.A.M.C., of Barking, to Jane Argo Irvine, of Old Meldrum, Aberdeenshire.

HOUSE—ROGERS.—On Feb. 6, at Hatherton Church, Staffs, Robert Joseph House, M.R.C.S., Lieutenant R.A.M.C., to Jean Masefield Rogers, of Fern Dell, Cannock.

ROBINSON—POPE.—On Feb. 10, at St. George's, Hanover Square, Philip Augustus Robinson, Lieutenant, R.A.M.C., of Wendover, to Kitty Pope, of Hanover Square.

DEATHS

BIGGS.—On Feb. 2, at Cheltenham, John James Egerton Biggs, O.B.E., M.R.C.S., aged 72.

COPELAND.—On Feb. 5, at Winchcombe, Gloucestershire, William Henry Lawrence Copeland, M.D., Camb.

DIXON.—On Feb. 8, Thomas Dixon, M.R.C.S., of Barton-under-Needwood, Staffs, aged 73.

GLENNY.—On Feb. 11, at Clapton-in-Gordano, near Bristol, Elliott Thornton Glenny, M.B.Lond., aged 59.

GORDON.—On Feb. 7, at Budleigh Salterton, George Arthur Gordon, M.D. Edin., of Richmond, Surrey.

GRIFFIN.—On Feb. 8, at West Kensington, Frederic William Waudby Griffin, M.D. Camb.

HEATON.—On Feb. 12, at Bexhill-on-Sea, Charles James Heaton, M.D. Brux., consulting radiologist to the Royal Sea Bathing Hospital, Margate.

HODGSON.—On Feb. 9, at Crewe, Sir William Hodgson, L.R.C.P.I., aged 85.

MACCARTHY.—On Feb. 7, Ibar Ansbert Orva MacCarthy, M.R.C.S., Major R.A.M.C. (retd.), of Notting Hill.

RYAN.—On Feb. 8, John Joseph Ryan, L.R.C.P.I., of Highgate.

SEDGWICK.—On Feb. 2, Philip Giles Sedgwick, M.R.C.S., of Vauxhall.

THOMSON.—On Feb. 11, at Dulverton, Somerset, Herbert Campbell Thomson, M.D.Lond., F.R.C.P., aged 69.

WHITE.—On Feb. 9, at Aspley Guise, Bucks, Edward How White, M.D.Oxfd.